JANUARY/FEBRUARY 1998

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Behind the Milton dream house's distinguished Colonial good looks lies a multitude of high tech materials and modern amenities

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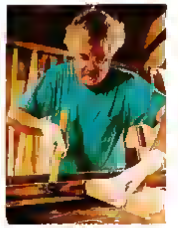

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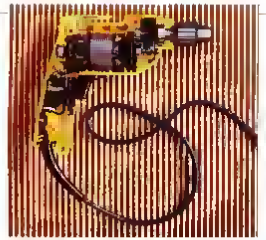

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Jeanne Marie Laskas recently got hitched. So, as a wedding present, we let her have a couple of months off. Her column will return in the next issue.

Power Tool

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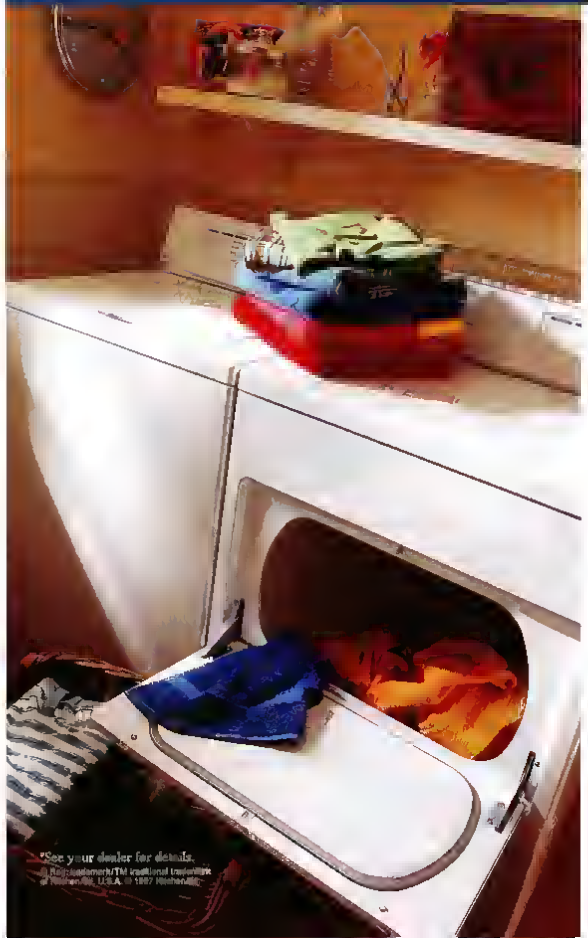
Now that he does his own laundry

HE KNOWS WHY
I *LOVE* KITCHENAID.



PHOTOGRAPHS, TOP TO BOTTOM, BY ANTHONY CUTRONA (2); SPENCER JONES

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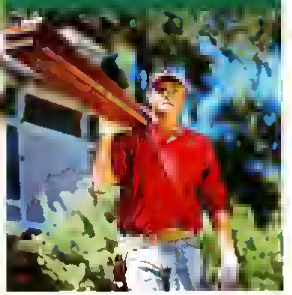

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As a teenager, **VERLYN KLINKENBORG** (writer, "America's First Houses") helped build his parent's ranch house in the Sierra foothills of California. Lately he has been applying those skills to an 1888 farmhouse in Canaan, New York, that needs a roof, a paint job and some new clapboards. "Part of the intrigue of old houses is seeing the layers of revision," he says. At the Milton dream house, he got a close look at the timber framed roof. "It's two and a half centuries old and still tight as a drum," he says. Klinkenborg, who writes editorials for the *New York Times*, has also written for *Smithsonian*, *National Geographic* and *Harper's*.

Photographer **DUNCAN SIM** had high praise for the "purity and simplicity" of the 17th-century Colonials he shot for "America's First Houses." He also admired the wood used to build them. Sim grew up in England where, he says, "We don't have houses like that. By the 1600s, we'd cut our big forests."

CURTIS RIST (writer, "Fire Sprinklers") began his journalism career as a correspondent in Haiti, arriving there just as President Jean-Claude "Baby Doc" Duvalier was deposed. "I'd wake in the morning and see dead bodies in the street," he says. "Then I'd try to find out what had happened." Now a staff writer at *This Old House*, Rist previously held the same position at *People*. His job change coincided with another milestone: the completion of his weekend retreat in New York's Hudson River Valley. After enrolling in a building course he saw advertised in *TOH*, Rist designed the contemporary style house himself and did some of the construction.

"I love shooting metal," says **BILL WHITE** (photographer, "Fire Sprinklers"). "You can get such a wide range of light and dark values. With the fire sprinklers, I didn't want to do the obvious with water spraying out, so I treated them as if they were chrome jewels and made them look especially reflective." An accomplished woodworker, White builds furniture with his favorite material, quartersawn oak.

HELP

LETTERS TO THE EDITOR
Got a problem? We can help. Got a gripe? We're listening. Have a happy experience with a supplier or manufacturer? Share the kudos. Contact us via E-mail at Letters@toh.timeinc.com or write to: Letters, *This Old House* magazine, 1185 Avenue of the Americas, New York, NY 10036

ASK NORM
Write your favorite master carpenter at *This Old House*, 1185 Avenue of the Americas, New York, N.Y. 10036, and get advice money can't buy.

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†Available feature comparisons vs. domestic compact SUV models. Excludes other Chrysler Corp. vehicles. All comparisons based on data available at time of printing. ††Late availability for V-6.

Always use seat belts. Remember a backseat is the safest place for children.

Henry Beecher, M.D.

Regarding yonr excellent article on the Crehore house ["This Very Old Honse," November/December 1997]. Former resident Henry Beechet wes far more than "an" anesthatist. Beecher was a professot of anesthesiology at Hervard Medical School for many years. His curriculum vitae is too lengthy for inclusion in e short letter, but suffice it to say that living in a house once occupied by this giant of out specialty would be an honor for any anesthesiologist.

BENSON BOOBLL, M D , *Stockland, N.H.*

Chemtcet Cool-Off

Some time ago on a *This Old House* segment you mentioned an air-conditioning unit that used a chemical reaction to cool e house in New Mexico—or somewhere that required air-condtioning for a good portion of the year. Do you heve more detaile?

MAXINE MOXON, *Fallbrook, Calif.*

Last year's Tucson project used a Servel gas cooler, which incorporates an environmentally friendly mixtnre of ammonia and water instead of Freon. The cooling cycle begins as the ammonia is vaporized (chemically separated) ont of the water solntion. Then the ammonia vapor condenses and becomes colder. Inside the house in a separate process, a heat exchange unit extracts warmth from indoor air. Back at the Servel unit, with the addition of heat, the ammonia vapor and water recombine, and the loop can begin again. For information on the Servel system, call 812-424-1800.

Easy as Pie

I am restoring e home that was built circe 1796 and wonld like to share e tip. The best prodnct of the many I've tried for cleaning hands and other recently painted parts is Crisco—it's better than paint thinners and removers. Once I'm done painting, I just dip into my Cnsco and slather it on. Paint will wipe off with paper towels, and further cleanup is a breeze. Soaping up afterward with dishwashing liquid will leave your hands soft and clean as a whistle. By the way, Cnsco is also great for making Maryland crab cakes.

JILL DIANE THACEY, *Princess Anne, Md.*

Thanks for the recommendation. We called experts at the Paint Qnality Institute, who were concerned that residnal Crisco on a brush might contaminate your next paint job—yon don't want vegetable oils mixed in with paint. Bnt yonr hands are a different story, so slather up all yon want.

Screwfusion

It appears *This Old House* magazine has used nicknames to describe screw bit heads in the Extras section ["Trimming Heads," September/October 1997]. Although I am in the business of packaging and retailing hardware, I would be confused if a customer asked for "triple Y" instead of "Tri-wing," although the latter is a trademarked name.

BILL BRUCE, *Bill's Tool & Supply, Lebanon, Penn.*

Here at *This Old House*, we avoid manufacturers' proprietary brand names whenever possible. We like to use common, descriptive terms because they apply all across the country and are not an endorsement of a single brand. Unfortunately, when products—like these screws—have several identities, choosing the one to print in an article can be a problem. That's why we provide detailed product descriptions, contact information and prices in the Directory section at the back of the magazine.

Weeping Window

I have a double-pane window that was factory-sealed. The window is basically two panes of glass in a metal frame weatherproofed with a rubber gasket. Moisture has gotten between the panes, causing condensation to build np inside. How do I get rid of the moistnre and reseal the window?

K. MCCULLERS, *via E-mail*

We hope you have a warranty on that factory-sealed glass unit, because a window that fails as yonrs has is difficult to reseal. If you're not still covered by wartanty, your next best bet is purchasing a replacement internal glass unit (commonly called an IGU) from the original manufactutet in the hope it will pop into the existing frame. Unfortunately, the most common fix for this problem is a new sash or a new window unit.

Great Walls of Firewood

Our 1947 cedar log house has 18-inch logs for both the interior and exterior walls. We're onnons about the history of Stovewood construction, and we'd like to know: How many houses of this typa were built?

THOMAS J. AND SUSAN CZARNIK, *Chicago, Ill.*

Late 19th-century builders stacked nniformly short logs (that were sometimes split) with mortar to fill in nmber frames and to build unbraced walls for outbnildings. Because the thickness of Stovewood walls offered insulation in cold climates and a way to utilize short or misshapen pieces of wood, some bnilders used them for houses as well. The majority of this country's Stovewood structures (numbering about 60) are in Wisconsin, historians believe, and some specnlate that the technique may have originated farther north, in Canada. But many of the earliest structures—which probably were not weatherproofed with clapboards or lime plaster—have been lost. Unlike bricks and stones, logs with exposed end grain soak np water and easily rot.

punch list

definition: a list of items incorrectly done or remaining to be finished on a construction job

- The Directory for the Tucson house's library ("Last Tour of the Tucson House," July/August 1997) did not include an address and telephone nnmber for the hardwood flooring contractor. Exquisite Hardwood Floor Design, 13 E. Roger Rd., Tucson, AZ 85705, 800-310-3566.
- The Equipment story on ductwork ("Dirty Ducts," November/December 1997) gave the wrong credit for the picture of the filter on page 50 and the dust close ups on page 52. The photographer was Josh McHugh.

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(extras)

Restoration Puppetry

The Swedish Cottage Marionette Theatre, where thousands of New York City youngsters have watched productions of *Aladdin* and *Cinderella*, was—like a cherished children's toy—showing signs of too much love. The 122-year-old log cabin had a shifting roof, raccoon-damaged siding, worn-out utilities and a pink, green and yellow interior too garish for even *Pee-Wee's Playhouse*. No surprise, considering the building's long and varied history. Built as a schoolhouse to represent Sweden at the Centennial Exposition in Philadelphia in 1876, it was reassembled in Central Park, where it served as a toolshed, a public restroom and, during World War II, a civil defense office. It became a workshop for New York's roving marionette performers in 1947 and a permanent venue for puppet shows in 1972. The City Parks Foundation closed the theater last August and is now restoring its Nordic Romantic peaked roof, natural wood siding and geometric carvings while revamping the interior performance space. When the charming little landmark venue reopens this spring, it should once again merit the description of the Centennial Exposition chronicler who called it "one of the prettiest buildings on the grounds."

MARIONETTE THEATRE BY JASON SCHMIDT; DETAIL IN SANDER BY JOSH MCHUGH

"More than ever, the house is the center of family life, an island of calm in a sea of doubt."
—Robert A.M. Stern

ICE CHIPPERS BY SPENCER JONES

Gritty Bitty

Big belt sanders can cover a lot of surface in a hurry, but this new pint-size bruiser can outmaneuver all of them on detail work. With a slender nose and variable speeds, it is aggressive yet surprisingly easy to control. The 1½-inch belt sticks out in front, not under the body, and tracks over two platens, not just one as with most belt sanders. Consequently, most of the surface area is exposed for sanding, and the belt works equally well moving inward or out. The tool performs best on the small and narrow—shaping the ends and edges of decking, removing paint from old trim, grinding down excess epoxy wood filler on fence posts and flushing joinery.

Chip off the Cold Block

Pounding away at driveway ice turns most snow shovels into twisted wrecks. For better results, try chiseling with an ice chipper instead. The most durable chippers have heavy handles of northern white ash and forged steel blades. Punch through the top—and hardest—layers of ice with a 3- to 4-inch-wide blade; then scrape and scoop at a 45-degree angle with a 7- to 8-inch-wide one. At the first sight of pavement, ease up to avoid damaging the surface or the chipper. When the thaw comes, these heavy-duty tools are handy for digging and chopping roots, edging walkways and scraping roof shingles.

extras

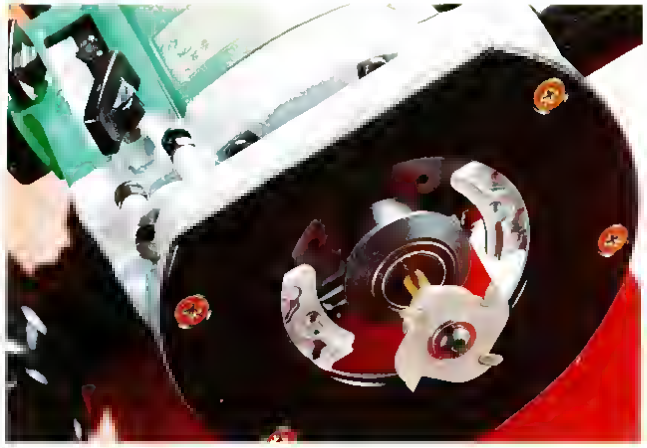
EVENTS & APPEARANCES

STEVE THOMAS
- Feb 27—Red River Valley Home & Garden Show, Fargo Dome, Fargo, North Dakota, 701 232 5846

NORM ABRAM
- Jan 17—National Association of Home Builders International Builders' Show, Dallas Convention Center, Dallas, Texas 800-368-5242, ext 191
- Feb 7—Good Living Expositions Home Show, Rockland Community College Field House, Suffern, New York; 1, 4:30 and 7 p.m.; 800-248-7469

TOM SILVA
- Jan 29-30—Mid-America Home Improvement Show, I X Center, Cleveland Ohio, 11 a.m.-10 p.m.; 330-678-4489
- Feb. 7—Pittsburgh Expo Mart Indoor-Outdoor Home Show, Expo Mart, Monroeville, Pennsylvania; 1-4 p.m., 412 856 1133
- Feb 25 26—New England Home Show World Trade Center, Boston, Massachusetts; 800-469 8859
- Feb 28 Mar 1—Akron Canton Home & Flower Show, John F Knight Center, Akron, Ohio, 800 865 6700

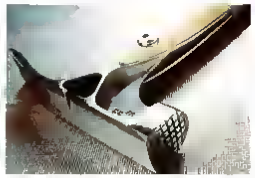
RICHARD TRETHEWEY
- Feb 25 26—New England Home Show (see above)



Bit Part

First, drill chucks didn't need keys, then recip saws were liberated from Allen wrenches. Now those skinny, easy-to-lose router wrenches may get lost for good. A new wrenchless router chuck makes bit changes as easy as opening a soda can. Pulling the chuck's sleeve opens the collet jaws, pushing back on the sleeve snaps the jaws onto the bit.

Primal Therapy



When *This Old House* contractor Tom Silva swings a hammer these days, he's usually doing finish carpentry. But every now and then, Tom says, he does a "little framing to get the demons out. Ever notice how framers are always happy at the end of the day?" This hammer is sure to keep framers grinning. Beautifully balanced, it weighs 22 ounces but feels lighter. The face has two corners to reach into tight spots, plus blunted waffling to grip—but not damage—nail heads. One cheek is hardened for toenailing, the other grooved for nail yanking. Best of all, the hickory handle is screw-fastened for easy replacement and protected by guard strips that ward off over-strikes.

Quality-of-Life Upgrade

Ground-source heat pumps, which capitalize on the earth's constant temperature to heat and cool buildings, are touted as paying for themselves within five years. But since installing a $13,750 heat pump two years ago ("High Tech Cooling," July/August 1996), Alec and Monica Jenkins of Sacramento, California, haven't saved a cent on utility bills—and that's fine with them. Although their bills haven't gone down since they installed the heat pump, they're getting many more days of heating and cooling for that price. "Before, in the winter, we would never heat the house beyond 66 or 67 degrees," Alec says, "and in the summer we tried to get by with only a couple of air conditioners in the upstairs bedrooms that we turned on at night so we could sleep."

ROUTER PHOTOS BY JOHN MCHUGH. ILLUSTRATION BY JULIETTE BORDA. DEMO PHOTOS BY [illegible] EMMA L. CHTEWEUK AND TIA [illegible] SPENCER JONES

Taking It All Off

Part of dealing with the horrors of occupants past is wallpaper that begs for annihilation. But what a messy task: wet shoes, pasty floors, sticky tools, buckets of sloshing water. A few products, however, now make the wallpaper removal experience easier and, dare we say, fun.

1 Puncture the paper with this triple-headed scorer, which zips along on little claws and leaves wallpaper shreds in its wake. The more scoring, the better stripper will penetrate, making the paper easier to remove. If working with wallboard, press lightly without gouging the wall.

2 One coat of this odorless premixed gel stripper (no need to add water) chews up the adhesive and stays moist for as long as you need to scrape—just don't use a fan, which may dry out the concoction.

3 Let the goop sink in for 30 minutes, then use a paper scraper or taping knife to peel off the old gunk, turning it into tiny accordion tapers that fall gracefully onto a tarp. Remove the paper and sponge the wall with water to remove any gooey residue. (Expect a lot of slop.) Climb down, look at the wall and say three times, "A paperless wall is a beautiful thing."

TOH Serenade

During their three-year courtship, Mark Ugar and Julie Lax rarely missed an episode of *This Old House*. The San Francisco couple even watched the show the night they got engaged. So at their wedding last July 6, the music they chose for their first dance was, naturally, the show's theme song, "Louisiana Fairy Tale." The show uses only the instrumental opening bars of the original 1935 version by Fats Waller, but Ugar and Lax were delighted to discover that the song continues with appropriately corny lyrics. "Keep dreaming with your head upon my shoulder/And don't awake until the stars grow pale/The world is at our feet/The picture is complete/Like a Louisiana fairy tale."

Seeing the Light

Edison's first lightbulbs featured carbon loop filaments that burned as hot they were used as much for heat as for light. Worse, they were quite dim, especially as the glass became coated with carbon. After the 1907 introduction of tungsten wire, which glowed more efficiently than its carbon predecessor, came a quick succession of improvements resulting in the Mazda lamps of 1910-1911, which had a zigzagging filament resembling a squirrel cage (those wheels made famous by exercising hamsters). Unfortunately, this elegant bulb was but another blip in lightbulb evolution. In 1913, General Electric's coiled tungsten design ushered in the modern lightbulb, which was so bright it required lamp shades. But now old houses with original unshaded light fixtures can use this reproduction of the squirrel-cage bulb. It illuminates authentically, but is easy on the eyes.

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WEB

The perfect period doorknob, faucet or architectural ornament is floating out there in cyberspace

www.oldegoodthings.com

Olde Good Things, a store in New York City that bills itself as the "place of architectural-ologists," salvages period pieces from brownstones, houses of worship and commercial buildings, listing its latest "excavations" every week on a Web site. A recent cybervisit turned up photos of 90-year-old quartersawn oak wainscoting from the Brooklyn Academy of Music; decorative terra-cotta from a brick facade; and several of the 10,000 doorknobs in stock. The store sells mainly wholesale to the trade, but the staff doesn't object to intrepid do it yourselfers poking through the treasure trove.

www.cowichan.com/business/etrading/

Before traveling to Whippletree Junction in British Columbia, renovators in search of antique mantels, lighting fixtures and other architectural details should first go to the Web site of Stein Bros. Trading Ltd. Such finds as a 14-by-12-foot oak mantel and a 1906 oak paneled restaurant interior look eye-popping even on screen.

BOOKS

LOOKING BACK

Although they used to be one of the most important items in a toolbox, hand planes never came with users' manuals. So furniture maker Garrett Hack has packed *The Handplane Book* with lore, tips, techniques and enlightening photos and illustrations for all those weekend carpenters who understand that no machine can work wood as well as a plane, "one thin and thoughtful shaving at a time."

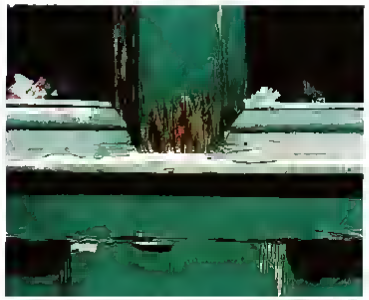
• In *Early Days in the Adirondacks*, Jeanne Winston Adler explores the life and photographs of Seneca Ray Stoddard (1843-1917), who did for the Adirondacks what Ansel Adams later did for Yosemite. His chronicle of unspoiled landscapes, as well as rustic camps and hotels frequented by Gilded Age moguls who fancied themselves "rusticators," captures the Adirondack spirit in all its nascent splendor.

Stern's first house was this modern Shingle style in Montauk, New York

• In *Robert A.M. Stern Houses*, Stern—perhaps the greatest house architect since Frank Lloyd Wright—takes a somewhat humble look back at 30 years of his work. Starting with a 1965 beach house that brashly responded to the "apocalyptic" world view of the International style, he examines his mission to "get beyond the trap of decontextualized Modernism." OK, the words are for other architects. But the glorious pictures are for the rest of us: 530 color plates that tell more about the way wealthy Americans live than words ever could.

Pre-Paint Protection

When the historic wooden facades of downtown Lafayette, Indiana, began to peel and rot—less than five years after being restored—Michael O. Hunt, a historic preservation buff who heads the Wood Research Laboratory at Purdue University, decided there must be a better way. In the fall of 1996, he and a crew built 279 miniature "storefronts" and tested 72 combinations of five variables: type of wood, design, caulk, water-repellent preservatives and paint. After 12 months of exposure to the elements, replicas that had been brushed with preservative before painting looked virtually unscathed. But those without pretreatment had cracked paint and loose joints. Water-based repellents—new on the market—reduced wood shrinkage and swelling as well as solvent-based formulas did. Two caveats: Brush on the repellent before the first lick of paint or primer goes on, and use only water repellents labeled paintable.



With no pre-paint preservative, rot sets in after only a year

Splitting Hairs

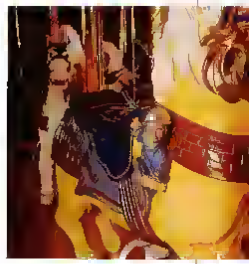
From the firm-grasp-of-the-very-obvious department comes a tape measure that labels fractional inches (⅛, ¼, ⅜ and so on) for people who can't remember what those tiny lines between the inch marks mean. Apparently there are a lot of those people. The manufacturer, Olympia Industrial, has applied for a patent and is already suing two companies that have allegedly knocked off the design. Hey, it's not too late to go metric.

¿Puede traerme el martillo, por favor?

"Everybody could swear in five languages, but they couldn't talk to each other," Colorado builder Al Scott says to explain why he wrote *Construction Spanish, Inglés y Español*, originally marketed to Texas and California's large Spanish-speaking work forces. This pint-size pamphlet with pocket-friendly rounded corners gives construction crews—and the people who hire them—the industry specific nouns, verbs and idioms they need. Scott's crew made sure the book included words and expressions that natives of Spain, South America and the Caribbean could all understand. "This isn't textbook Spanish," Scott says. "It's what gets the job done."

Horsing Around

In 1990, Chuck Kaparich of Missoula, Montana, chose a carousel horse as his first carving project. As one horse became four, he imagined an entire whirling carousel on the city's riverfront. He enlisted platoons of volunteers to rough out carving blanks with band saws, hand carve the details, and then sand and paint the herd. Organizations and individuals "adopted" the 38 ponies, paying $2,500 to design and name each one. There's even a horse called Norm, although he was named for a fraternity award, not our favorite master carpenter. Norm Abram might cotton to Hard Hat, whose saddle is replete with the tools of the trade—and the figure of a tiny windblown carpenter hanging on for dear life.



Dry Run

When it snows in Chicago and every runway at O'Hare is blanketed in white, a small stretch (100 by 75 feet) of taxiway remains wet but clear. That patch happens to be asphalt that contains highly conductive synthetic graphite made with coke from petroleum and electrically heated with copper cables. Computer sensors monitoring moisture and temperature keep the pavement a toasty 34 degrees Fahrenheit—which melts snow at the rate of 1 inch per hour. Since 1994, the O'Hare results have been so encouraging that this winter New Jersey is expecting to test conductive asphalt on a bridge. No one is yet marketing the material for private houses, but the Canadian National Research Council soon will test conductive concrete for sidewalks and driveways.

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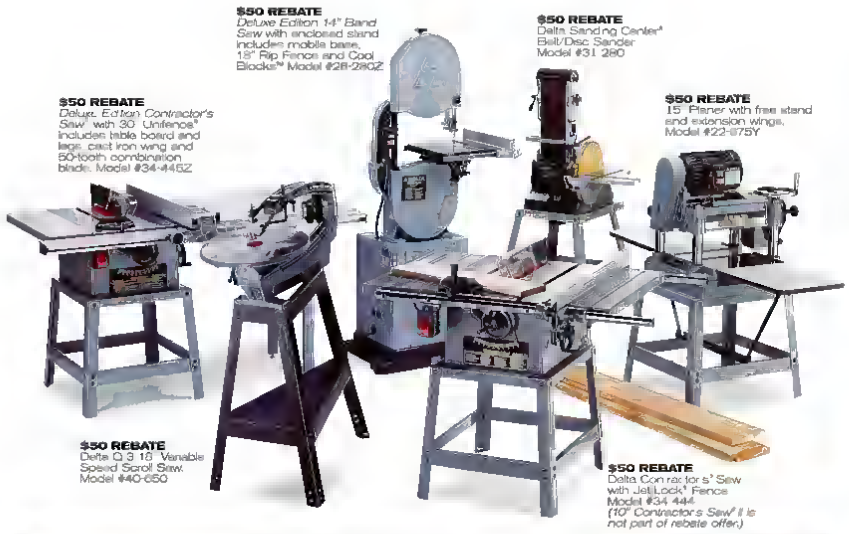
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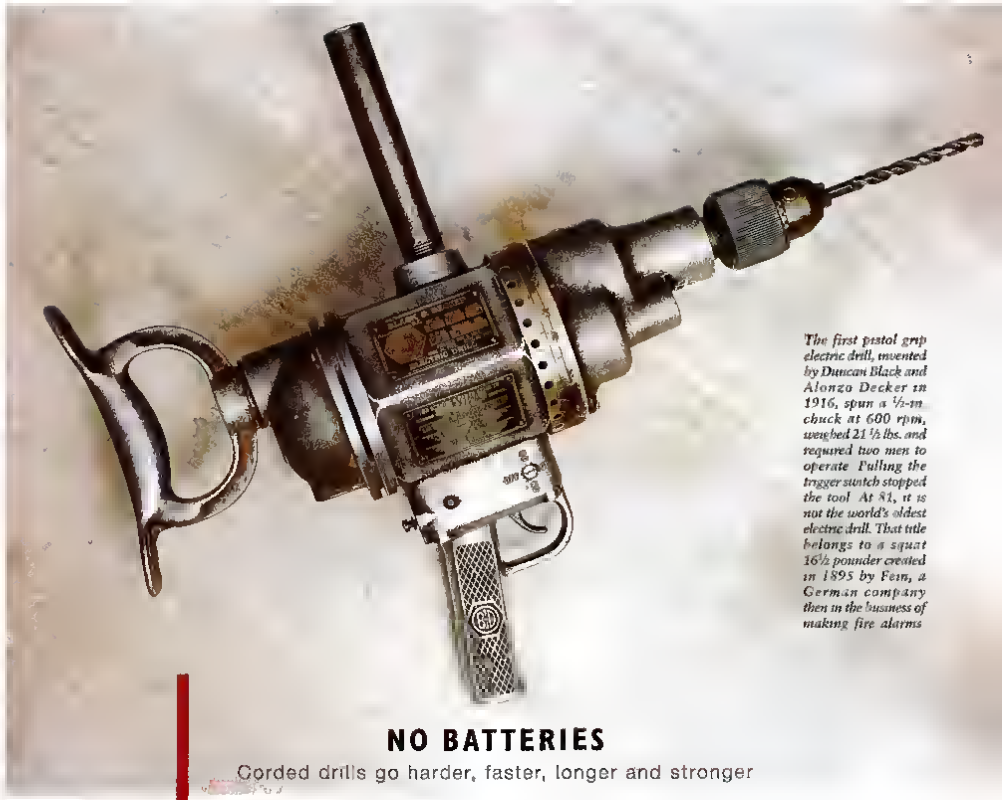
BY MARK FEIRER



The first pistol grip electric drill, invented by Duncan Black and Alonzo Decker in 1916, spun a ½-in. chuck at 600 rpm, weighed 21½ lbs. and required two men to operate. Pulling the trigger switch stopped the tool. At 81, it is not the world's oldest electric drill. That title belongs to a squat 16½ pounder created in 1895 by Fein, a German company then in the business of making fire alarms.

NO BATTERIES

Corded drills go harder, faster, longer and stronger

t's 10 a.m. Do you know where your contractor is? Probably taking a well earned break in a day launched at dawn. I wasn't surprised, then, to find the Milton house crew at a picnic table in the barn. Judging by the dusty cuffs and the spread of elbows on the table, they'd had a busy morning. I had them just where I wanted them. "Anyone interested in looking at some new corded drills? I have a bunch in the trunk." Shoulders snapped back, and even the weariest worker perked up, *This Old House* contractor Tom Silva even stopped reading a tool catalog. Drills do that to people who depend on them.

Despite the popularity of battery-powered drills, corded drills haven't been run off the job. Plugged into a steady, limitless power supply, a cord turns a drill into an ever-ready companion with the muscular versatility of a decathlete. It can wrestle 6-inch holes through joists, vault over (or under) obstructions and keep running longer than you can in a remodeling marathon. Fit with all manner of accessories to mix, grind and scour, a corded drill is ready for any

PHOTOGRAPHS BY ANTHONY COTSIFAS

opponent, including Tom. When he holed a triple-decker flitch beam sandwich (two slices of ½-inch steel between buns of laminated veneer lumber), he didn't grab a cordless. "A big hole or a lot of 'em," says Tom, "and a cordless won't do."

A visit to a tool store or a cruise through catalogs turns up a bewildering variety of corded drills, with prices ranging from $40 to $200. The same manufacturer may make identical models with different prices. Why a drill costs what it does and how well it will perform depends on its innards: its gearing, bearings and motor construction. But short of taking one apart, the best way to judge a drill's construction is to look at its chuck size and speed.

Chucks are measured by the largest diameter shank they accept: ¼, ⅜ and ½ inches. Not many companies still make ¼ inch drills, but they are entirely suitable for light work or small hands. The ⅜ inch chuck is the most common. It is reasonably light yet big enough to handle many spade bits and drill accessories. Keyless hand-tightened models are particularly popular in this size.

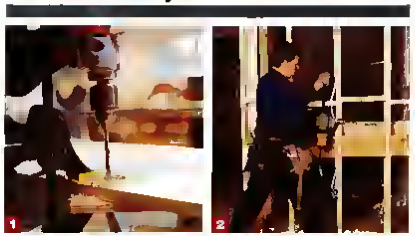
Tom, however, prefers a ½-inch chuck with a key, the setup on nearly all of his half dozen corded drills. "It just doesn't make sense to use anything less," he explains. Because it takes a lot of torque (turning force) to spin the fat shanks on the attachments he uses—everything from big auger bits to mortar mixing paddles—a ½-inch chuck generally indicates more robust inner workings.

How fast the chuck turns always involves a trade-off between

A Good Drill Undresses

Will a drill stand up to hard use? The answer is yes, if it has such features as **1)** *a cord-protecting strain relief fitting;* **2)** *a rubber cord jacket (more flexible and wear-resistant than plastic),* **3)** *auto-stop motor brushes (which don't get stuck in the motor when they wear out),* **4)** *helical gearing (stronger and more efficient than spur gears),* **5)** *ball or needle bearings (smoother and longer-lasting than bronze bushings), and* **6)** *a keyed chuck with ground jaws (which afford the best grip).*

The Hole Story



"It's the bit that makes the drill look good," says Tom Silva. Whenever he picks up a bit, he looks for nicks, rounded edges and the blue discoloration indicating lost temper. Then he grazes his fingertips over the bit's edges to test sharpness. "If it's not in good shape, I won't use it," he says. Even the sharpest bits make splintery exits, so Tom clamps a backup scrap behind the hole (1). High-torque drills will get the jump on inattentive drillers, a fact Tom knows all too well. Once when a knot stopped a bit cold, the drill swung counterclockwise and carried his hand through the adjacent drywall before he could release the trigger. Now he always braces himself with a wide stance (2) and holds tight to an auxiliary handle, the longer the better. If his hand might hit an obstruction, he will rest the drill against it preemptively (3).

Lots to do.

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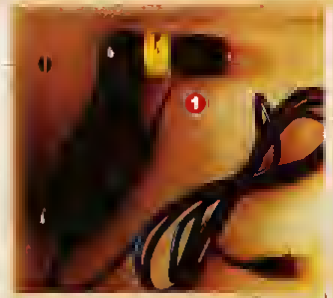


FAMILY PORTRAIT

Members of the corded drill family all spin chucks clockwise and counterclockwise. Nonetheless, they otherwise exhibit a surprising amount of diversity. Handles, for instance, come in the familiar pistol grip, the "T" (which balances the motor's weight over the hand), the "D" (which puts the hand in line with the motor) and the spade (a D-handle turned 90 degrees but often adjustable). Double insulated drills have plastic housings and two prong plugs; drills with metal housings need three-prong grounding. Amperage, as advertised on the spec plate, is a rough guide to a tool's power but the rarely used "watts out" measures drill muscle more accurately.

1. A compact ⅜ in. drill with paddle switch reaches places other drills can't. 3.5 amps, 0-2,500 rpm, 4½ lbs.

2. A removable auxiliary handle provides extra leverage to resist this ½ in. drill's high torque. 6 amps, 450 rpm, 9½ lbs.

3. Ratcheting action lets the keyless ½ in. chuck bite down hard on bits. 5½ amps, 0-1,200 rpm, 5¼ lbs.

4. The lightest available ¼-in. drill weighs 2 lbs. 2.1 amps, 4,500 rpm.

5. A depth stop comes standard on this ½ in. D-handled model. 5.2 amps, 550 rpm, 5½ lbs.

6. Can't get the keyless ½-in. chuck tight enough? Push a button to lock its spindle. 7.8 amps, 0-850 rpm, 4½ lbs.

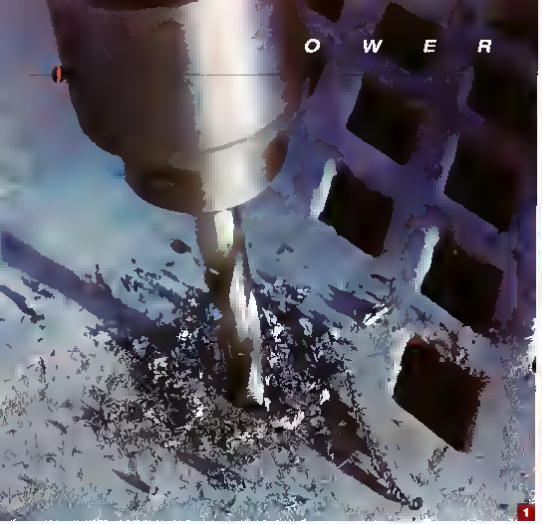
7. The long housing and sturdy D handle of this ½ in. right-angle drill help in the fight against its torque. 6.2 amps, 400-900 rpm, 8½ lbs.

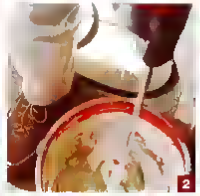
8. An extra powerful permanent-magnet motor powers the smallest ½-in. drill on the market. 3.4 amps, 0-600 rpm, 4½ lbs.

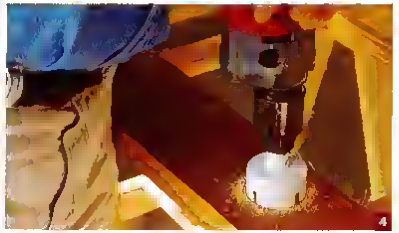
9. If this slim right-angle drill with a ⅜ in. chuck can't reach into a space, you're probably out of luck. 3.2 amps, 1,200 rpm, 4½ lbs.

10. Three handles help users cope with a ½-in. drill's weight and torque. 7.5 amps, 360-1,200 rpm, 11 lbs.

11. This ½ in. T-handled drill has a one-piece cast-aluminum handle and housing. 4 amps, 0-1,200 rpm, 4¾ lbs.







speed and torque) the more of one, the less of the other. Most general utility drills run at a top speed of about 1,200 revolutions per minute. Drills designed for heavier-duty work have motors geared down to 900 rpm or so. And when the going really gets tough, top speed will be 300 to 600 rpm. Using these slow spinners, plumbers hog holes through framing lumber and drywall crews mix 5-gallon batches of joint compound.

The most durable drills have machined parts (more precise than cast), high-efficiency motors (more output for a given amp input), extra-thick insulation on the motor windings (more protection against short circuits), externally accessible motor brushes (for easy replacement), and bearing-supported motor shafts. On shock-resistant double-insulated drills, housings of glass-reinforced nylon resist impact and solvents better than polycarbonate. Keyless chucks with a steel shell wear better than those of glass-filled nylon.

No drill, even one with every imaginable engineering refinement, can win Tom's affection unless he likes the way it balances in his hand. "If I have to spend the whole day with it," he explains, "the right one won't leave me tired." When a drill feels good, you can use it longer with greater safety and accuracy. That's why the guys in Milton didn't spend any time looking at instruction manuals or reading specifications when I opened up the boxes of drills for them. Instead, they flipped switches, spun chucks and sighted down the tools like gunslingers, drilling imaginary holes in the air. They quickly found their favorites, and not one of the decisions was based on rpms, price or amps. ■

Material whirl

1. For metal, use a high-speed steel twist bit. Start the drill slowly, increase pressure and speed as the bit digs in and then release pressure (but maintain speed) just before the bit punches through. 2. To mix grout or plaster with a drill-powered paddle, pour them gradually into liquid, to minimize strain on the drill. 3. The cone of powder that builds up around a masonry bit shows that the right pressure is being applied; lift the spinning bit frequently to clear the hole. 4. A hole saw's teeth should leave an evenly scored circle when they first touch, or the hole won't be straight.

Chuck Transplant

Lose the chuck key again? Maybe it's time to swap that old keyed chuck for a hand-tightened keyless model. Getting a chuck off is easy—sometimes. Unplug the drill, open the jaws completely, look inside for a screw and remove it with clockwise turns. Then slip the short end of a 5/16-in. or larger Allen wrench into the chuck and tighten the jaws securely on it. With the drill clamped on a workbench, tighten the end of the wrench with a mallet so that the chuck turns counterclockwise. The blow should loosen it from the spindle. Screw off the old and screw on the new chuck, then reverse the removal steps. If the chuck isn't off in 10 minutes, it's a job for a service shop.

FOR SOURCES, SEE DIRECTORY—PAGE 112

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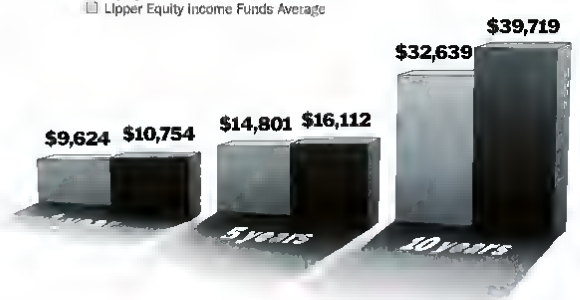

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BY JEFF TAYLOR

ANGLE IRONS

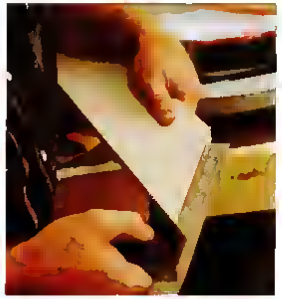
Precision or speed? That is the question

Use any tool long enough, and soon it becomes a favorite· a balanced hammer, a constant tape measure, a hand-smoothed flatbar or a time-honored square. In my early years of carpentry, I regarded my combination square as the best possible tool for making 90 degree cuts or the tricky, often dastardly 45-degree angle It was perfect for laying out scarfs and miters, after my joinery skills improved beyond the spit-and-putty stage. By the time I could build houses in my sleep, the combination

A combination square has a head (this one is machined brass and slides along a rule of satin-chromed steel). The ribbed thumbscrew locks the head on the rule If this tool goes out of whack, the manufacturer will return it to square for a $5 fee.

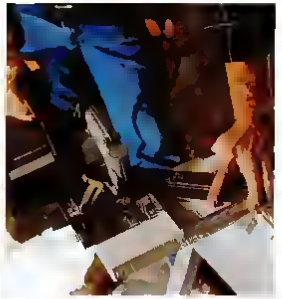
PHOTOGRAPH BY ANTHONY BOTS

THREE HEADS AND A TRIANGLE



Square Head

To check the accuracy of a miter, master carpenter Norm Abram fits the cut between the rule and the 45-degree face of the square head. If the miter is off, light will show. Veteran woodworkers also use the square head to find the depth of dados, mortises and rabbets.

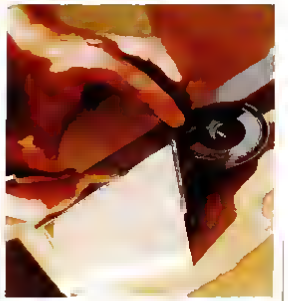


Three-Sided Square

On square cuts, Norm hooks the flange over the rafter-angle station and uses it to guide his circular saw. For angled cuts, he hooks the square to the desired angle (indicated on the long edge) and marks the cut line down the square's opposite edge.

Center Head

A center head lets the workers quickly find the center of their stock. Norm keeps the V-shaped head snug against the side of the piece and the rule flush against the top. Then he draws perpendicular lines across the end of the stock, where the lines intersect is the center.



Protractor Head

A rule fitted with a protractor head allows Norm to mark cuts for any angle from 0 to 180 degrees. He says this attachment is most useful to finish carpenters and furniture makers who frequently work with angles other than the 45 and 90 degrees of a common square head.

square moved like part of my hand. And then came the day I discovered another tool, less pretty but more practical.

But a combination square was my first love: a heavy-duty 12-inch beauty from Stanley Tools, the same one I used for most of my life as a journeyman carpenter. Later, I acquired others, rubbing the polished steel with oily rags and affection. My daily workhorse was a c-square made by the Union Tool Co. with a 12-inch rule calibrated down to 1/64 of an inch—a true machinist's tool and a gift from my father. Next favorite might be the Steelcraft, with its odd protractor and center heads. Unquestionably my most valued antique is an L.S. Starrett No. 4 Grad with an 18-inch rule. I call it the Bunthne Special, after Wyatt Earp's fabled long-barreled revolver. The smallest is an exquisite and rare 9-inch model by Mohawk, ideal for cabinetry work. The little levels are intact on each, but only one head retains its tiny metal scribe. All well made, they are like old figure skaters: a little stiff in the slide but still graceful.

Leroy Starrett patented the combination square in 1880, originally as a precision tool for engineers and machinists, but it was quickly adopted by carpenters for building houses. It's also a protractor, marking gauge, level and steel rule, far more versatile than an ordinary L-shaped try square. Only a combination square can put a teeny mark between the cheeks of a gnat; just the thing for fine cabinetry work or finish trim. For measuring the depth of a dado or scribing a rabbet, no other square will work. A device of rare beauty and history, calibrated to tiny fractions of an inch, the combination square links us to a time when speed was never so important as precision and grace.

My first boss taught me how to use one. In his hands, he could make it click and slide like an abacus, and I practiced until I could slap it on a mark and set the blade to the proper length automatically. Unfortunately, the very moving parts that make it so handy also make it prone to wear under heavy use and, eventually, to inaccuracy. When your combination

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SQUARE SHOPPING

When deciding which combination square to buy, first pick one up: the heavier the better. Plastic or cast zinc heads may lose their form the first time they are dropped or knocked. A head of forged or cast steel will provide longer lasting straight faces. Hold the rule up to the light, and sight along its edge. Reject any with bows and bends; those made of hardened and tempered steel will retain their shape. Better rules have a matte finish and machine-engraved markings injected with ink. The rough, pressed marks on cheap rules are less precise and tough to read. Finally, grab the square by the head, tighten the thumbscrew and try to move the rule up and down and side to side with the other hand. Any slip or wiggle betrays an inaccurate tool.

square goes out of square, you're just plain out of luck.

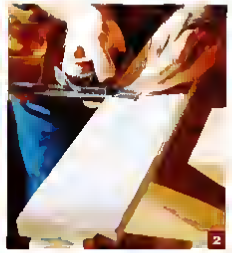
Until about 15 years ago, most carpenters carried a combination square in their tool belts. Then one day, there's a new kid on the site. His square is a clunky triangle of rustproof aluminum and zinc: pure function, blind galumphing utility. He calls it a Speed Square (others call it a tafter-angle square), at which you sneer inwardly until you see it at work. It makes layout a breeze and, when he drops it three stories onto concrete, it doesn't lose a degree. No debate about it. A triangle is better.

Eureka and drat. This indestructible square is a tool you've got to have, immediately. Now you must root out all your unconscious attachments and rewrite the very DOS of your work habits. Finally, you'll have to explain to your old combination square why it will henceforth live in your shop, instead of riding at your side, holstered in your tool belt.

I find myself using a triangular square all the time, seduced by its rough and ready simplicity. But one morning, as I'm about to cut some deck railing, my triangle decides to camouflage itself somewhere in the shop clutter. The old Steelcraft peeks shyly out of my toolbox, offering itself. After checking its squareness by drawing a line around a 4x4—OK, the last line meets the first, exactly on the corner—I mark out the scarf joint on my rail stock, my hand and c-square finding their old, precise rhythms. The joint matches perfectly, a honeymoon fit.

Laying out the baluster placement on the underside is also a snap; I set the square's head at 2 inches, place a pencil in the notch at the tip of the rule and run the body of the combo square along the rail to trace the line. Old memories rush back: a gazebo in Galveston, some wainscoting in Washington, those pergolas in Petaluma, that clepsydra in Corvallis, all built using various combination squares. I was young and foolish, practically immortal, with lofty ideals and only the barest inkling of my own ignorance. Now I know too much, and am fat too practical.

1


2

Let 'Er Rip!

1) To ensure his table saw blade is perpendicular to the table, Norm cranks the blade up and holds his 6 in. combination square along side, not touching the carbide teeth. 2) C squares are also handy for scribing cut lines along the length of a board. Here Norm slides the square's head along the board's edge while holding a pencil against the end of the rule. This two-handed jigsaw leaves a line equidistant from the edge of the piece, regardless of dips or bends.

STUDIO COMBO SQUARE BY SPENCER JONES

FOR SOURCES, SEE DIRECTORY—PAGE 211

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BY MARK FEIRER

After a hard day's setting ceramic, Joe Ferrante, This Old House tiling contractor, relaxes in the kids' tub at the Milton dream house. This job's biggest challenge was to fit the strip of handmade alphabet tiles—thick, irregular and not entirely flat—into a field of thinner, smaller and relentlessly uniform hall tiles.

MEASURE FIRST, CUT TWICE

Secrets of a great tile job

You can't sand out, grind off or paint over mistakes in tile," says Joe Ferrante, tiling contractor for *This Old House*. "It has to be right." For the tile surrounding the children's tub at the Milton dream house, that means using techniques and materials that will shrug off years of splashed water and ricocheting rubber ducks. It also means giving tiles an overall symmetry—top to bottom and side to side—that pleases the eye. The hands of a skilled tiler like Ferrante, who has spent 30 years in the trade, can seemingly make rigid pieces of fire-hardened clay stretch, shrink, climb walls and turn corners as if they were a seamless sheet.

The secret is meticulous planning. First, Ferrante measures the height and width of each wall and determines whether they are plumb. Then he checks the tub and ceiling to see if they are level. He divides the width and height of the wall by the measure of each tile, allowing a small grout space. If the division doesn't come out evenly, he will have to make cuts. For example, if a wall is 43 inches wide and each tile slightly less than 4 inches square, the last tile in the row would have to be cut down to 3 inches. Ferrante says a single odd tile stops the eye, so he divides the odd tile into two 1½-inch-wide pieces and places one at the beginning of the row and one at the end. This creates a symmetrical, balanced border of cut tiles. Ferrante works out the entire layout of each job before he picks up the first tile. "Believe me," he says, "I always measure more than twice."

PHOTOGRAPHS BY KELLER & KELLER

GETTING STARTED

A good tile job begins with a rigid supporting frame. In this bathroom, a 2x4 ledger nailed to the studs holds up the edge of the tub, and 2x6 blocking nailed between the studs stiffens the wall. Once the plumber finishes roughing in the shower valve and tub spout, Ferrante climbs into the tub (protected with several thick drop cloths) and fastens a vapor barrier to the studs. Although it isn't necessary on interior walls, this barrier lessens the chance of water vapor penetrating the wall. Using 15-lb. roofing felt (4-mil. plastic works too) and just enough ⅜-in. staples to hold the paper up, Ferrante works from tub to ceiling, overlapping the horizontal seams about 4 in. and the ends at least 8 in. The paper's bottom edge tucks neatly behind the tub's lip.

When time and budget allow, Ferrante prefers tiling over inch-thick wire-reinforced cement mortar. These old-style thick-bed installations are virtually bombproof, but on most projects he uses ⅞-in.-thick cement board or "rock"—panels of concrete sandwiched between fiberglass mesh. To fit a panel on the tub walls, he first rakes it with a carbide-toothed scoring tool guided by a straight edge. Gritty dust spits from the cut. After several quick passes, he snaps the rock like it's a piece of drywall and slices the back side fiberglass with a razor knife. Any irregular edges get a quick stropping to keep the gap between installed sheets at ⅛ in. or less. For fixture holes, he either drills with a carbide-grit hole saw or scores a circle and punches it out with a hammer; he makes irregular cuts with a reciprocating saw and a grit-edged blade.

The first rock panels go on the ceiling, rough surface facing out. Standing on ¾-in. plywood flopped over the tub, Ferrante drives screws in the panel as his brother Chuck bench-presses it up to the framing. Though 1¼-in. roofing nails are often used to secure the panels, Ferrante prefers the holding power of 1⅝-in. double-threaded cement-board screws, which he places 8 in. apart. Unlike drywall screws, these have thicker, larger-diameter heads and a corrosion-resistant polymer coating. Once Ferrante finishes the ceiling, he runs a thick bead of silicone along the base of the tub's lip, then gently slides the cement board down until its edge squishes into the sealant. He gives all horizontal joints between panels the same treatment. After fastening the three walls, Ferrante caulks the vertical joints and tools them smooth.

Cracked tile and water leaks are a nightmare, so Ferrante bridges all seams and corners with a layer of fiberglass mesh tape. Although the tape is already adhesive, he beds it in tile mastic and trowels another layer over the top. ("Cheap insurance," he explains.) Next he covers every square inch of cement board with a skim coat of mastic, a necessary step in Ferrante's judgment because it locks the mastic to the rock and improves the bond when he sets tiles. Using a straight-edged trowel, he forces the mastic into the pores of the cement board, listening for the scrape of metal as a signal that he is pressing hard enough. As Ferrante continues, the gray board gradually disappears beneath a veil of white adhesive. The wall is now ready for tile.

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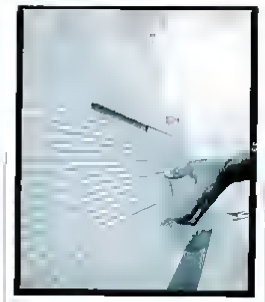
TILING

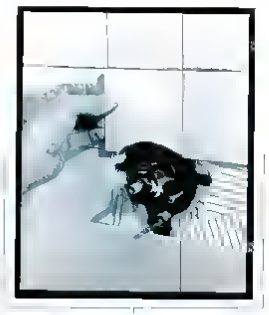
Tile can be set in one of two adhesives: thin set (a cement-based product mixed on-site) or mastic (a solvent- or water-based premix). Mastic has more "grab" and less slip than thinset and stays sticky longer, about 40 to 50 minutes. With his notched trowel, Ferrante combs the water based acrylic goop in curving, furrowed swaths over as much area as he can tile before it skins over.



Holding a stack of tile in one hand, Ferrante quickly deals tiles to the wall with the other, firmly nudging each up and down slightly to seat it in the mastic. To look right, tile must be seated in level courses, so when a tub edge is level, he just rests the tiles on it and works up the wall. Where the tub slopes, he works down from a level layout line. He'll cut the pieces for the bottom row last.

Tight joints mean less grout—the weak link in tiling—and make tile easier to set, rows simply stack one atop another without plastic spacers. As long as the mastic remains soft enough to permit slight adjustments, Ferrante levels every eighth row and works down, coaxing tiles this way or that to even out the grout lines. With a light sweep of his hand, he finds protruding tiles and pushes them flush.

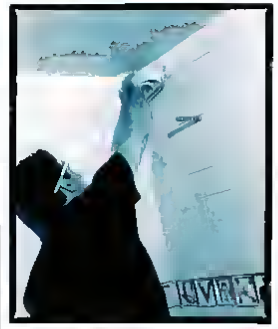
To fit the bottom row where tile meets tub, Ferrante holds each piece against the gap and marks where he'll make the cut. He then scores it on a snap cutter and breaks off the waste with his pair of nippers. Snap cut tiles have slightly rugged edges, so Ferrante rubs them smooth with his "hockey puck," an abrasive disc covered with silicon carbide, fine on one side and coarse on the other.



Ferrante doesn't shape the tiles that fit around the rough plumbing until all the uncut tiles are up. He chews a semicircle into the tile with his nippers, leaving enough space around the valve so stray globs of mastic don't obstruct it. A bucket of water and a sponge stay nearby so he can clean up any excess adhesive before it cures, after that, only a toxic organic solvent will be able to cut through it.

The handmade alphabet tiles add a dash of color, but Ferrante couldn't fit them on the wall as evenly as the machine made field tile. He trimmed a whisker off the sides of each with a diamond-blade wet saw. Then, because they weren't perfectly flat, he buttered the back of each tile with mastic to ensure complete adhesion. By comparison, the rest of the wall and ceiling went up easily.

GROUTING

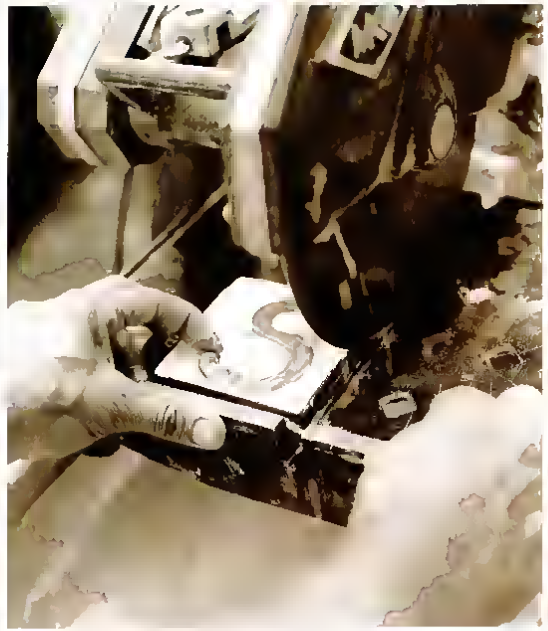


Grout is the cement-based joint filler applied 24-48 hours after the last tile has been set. To enhance crack resistance, Ferrante mixes a liquid latex additive with his grout powder. With a rubber-bottomed grout trowel held nearly flat, he forces the creamy mix into every joint. Then he cuts off the excess with diagonal strokes, holding the trowel on edge. To load and smooth joints between the alphabet tiles, he uses his index finger.

Ferrante compacts grout joints with a striker, a round tapered tool he made from a dowel. When it finds a low point, he presses in more grout. The grout on the tiles dries to a haze in 10 minutes. He then wipes off the residue with repeated diagonal strokes of a damp sponge, revealing the tiles' final luster. Tip: If haze is difficult to remove, try a 50/50 mix of white vinegar and water.

FOR SOURCES, SEE DIRECTORY—PAGE 117

Nip and Cut



Tiling craftsmen like Joe Ferrante can do wonders using only hand tools, but some cuts (and some tile) demand the precision of a wet saw, above. For the 50 cuts on the alphabet tile, for instance, he marched the menagerie one by one to the saw's sliding carriage and fed them through the spinning diamond-grit blade. As cooling water played over the blade and splashed into the basin below, he slowly peeled off slivers of ceramic.

No tile setter could survive without nippers and a snap cutter. Ferrante uses a carbide-edged nipper, center left, for trimming the curves around the valve stem and the notches that clear the shower head. The ragged "rat's teeth" edges left by nipping will be hidden by a flange or plate. "Don't nip into the tub," he warns; the pieces will grind right through the drop cloths. For straight cuts, Ferrante kneels to the snap cutter, bottom. Like a glass cutter on rails, it leaves a tiny surface fault-line that he exploits with a deft sweep. A few strokes with a carbide grinding disc leave the edge smooth.

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BY PETER JENSEN

GLUED FOR GOOD

What if you never, ever want it to come apart?

With a little help from a roller fed by a squeeze bottle, Norm Abram spreads glue quickly and evenly along the edge of a pine board. Before the glue goes down, he dry-fits the biscuit joinery to make sure all is well

In a corner of his quiet, slightly cluttered workshop, *This Old House* master carpenter Norm Abram reaches for a roller-topped squeeze bottle and with a quick back-and-forth motion coats the edge of a pine board, then another and another He cranks the three pieces together with bar clamps, and the glue goes to work, its thin film becoming stronger than the wood itself in the hairsbreadth seams.

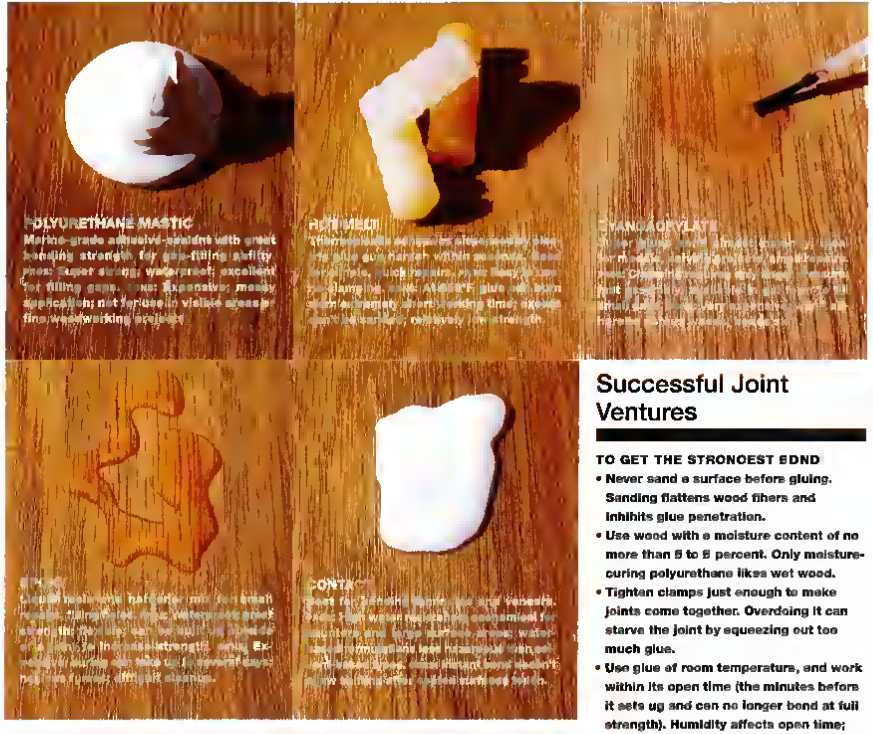
The pale yellow glue Norm often uses is a 20th-century invention, but the simple act of gluing is thousands of years old For aeons, the stuff that stuck was gathered, not made "If someone dropped me off in a forest and said, 'Make glue,'" says Joe Karchesy, a forest products chemistry professor at Oregon State University, "I'd be looking at tree pitch. But it's speculation to say exactly how glues were discovered."

Inevitably, manufacturing replaced gathering. In Boston in 1808, Elijah Upton opened this country's first hide glue factory, and many more followed, becoming the proverbial destination for under-performing racehorses. Skins were rendered in a boiling lye broth, which cooled into

PHOTOGRAPHS BY KELLER & KELLER

M A T E R I A L S

STICKS AND BONDS



quivering, gelatinous blocks that were air dried, then made into flakes or pellets.

"Hide glue hasn't changed much," says Dave Nick, an industry consultant. "It just doesn't smell as bad." Many woodworkers still heat up their electric glue pots to dissolve the flakes and pellets in water. They like the strength of hide glue—it can handle sheer loads of more than 3,500 pounds per square inch—and they appreciate a unique feature. It quickly softens under warm water or steam, allowing joints to be reset and reclamped.

Today, hide glue is surrounded on store shelves by bottle after can of sticky liquids, powders and pellets. Retailers sell just a dozen or so distinct types but under innumerable brand names. Each of these glues is good for at least one and often several tasks, but there's no universal formula that can glue it all. The only way to be sure of making an unbreakable bond is to know which glue does what.

After hide glue, the history of adhesives shifts from the stockyard to the laboratory. The oldest synthetics are resorcinol and urea-formaldehyde resins. Developed in the 1930s, they can bond thin veneers into plywood, convert sawdust into particleboard, and laminate lumber into beams. Next came polyvinyl acetate, known then and now as white glue. By the 1950s, most homes had a bottle of it on a workshop or kitchen shelf. Its sour but not unpleasant odor still crinkles the noses of school children as they bend over pasting projects.

"I grew up with white glue," says Norm, "and if the yellows hadn't come along, I'd still be using it." Strong and clear-drying, white glue remains a good choice for joining wood that stays indoors. Water—even high humidity—will defeat it.

Aliphatic resin—Norm's yellow glue—came out in the early 1950s. It has better moisture resistance and greater strength than white glue as well as higher viscosity, which means it's less runny. When dry, it is easier to sand. A new version, called type II, appeared seven years ago. It has even more strength and water resistance and a faster grab or setup time.

"Fast grab is a big selling point for some people," says Dale Zimmerman, a technical service representative at Franklin International, a company that manufactures yellow glue, "or it can be a real headache on a more complex project if the glue gets too dry

ILLUS. SAMPLES BY ROSA AND TOSA

Successful Joint Ventures

TO GET THE STRONGEST BOND

- **Never sand a surface before gluing. Sanding flattens wood fibers and inhibits glue penetration.**
- **Use wood with a moisture content of no more than 8 to 8 percent. Only moisture-curing polyurethane likes wet wood.**
- **Tighten clamps just enough to make joints come together. Overdoing it can starve the joint by squeezing out too much glue.**
- **Use glue at room temperature, and work within its open time (the minutes before it sets up and can no longer bond at full strength). Humidity affects open time; in Washington, D.C., you might have five minutes, but only two in drier Las Vegas.**
- **Fit twice; clamp once. Releasing clamps to shift glued wood weakens the joint.**
- **Be patient with clamps. Leave them in place for an hour (yellow glue) to overnight (resorcinol and urea-formaldehyde).**
- **Scrape off old glue before regluing a joint.**
- **Don't use glue past its prime; signs of old age include clumping, separation and excessive viscosity.**

APPLICATORS

1. *Strung wrapping on these French-made bristle brushes eliminates any possibility of glue reacting with metal and staining wood. 120-watt 1-quart electric glue pot keeps hide glue at a constant 140 degrees F.* **2.** *Rubber bulb dispenser holds 1 pint and delivers glue through three interchangeable brass tips or with a metal roller; hopper-style roller has foam or soft rubber covers and holds 1 quart to spread a lot of glue fast.* **3.** *Spreader kit has a roller and eight tips for injecting glue into different size mortises, dowel holes and biscuit slots.* **4.** *Accordion style injector pumps through a fine needle, high-pressure injector rams glue into loose joints without the need for disassembly.* **5.** *Epoxy applicator, front, mixes resin and hardener through spiral-core nozzle, powerful 350 watt gun quickly turns hot melt glue into a sticky goo.*

before half the joints are clamped up."

"A lot of people get to the glue up stage and can't do it as fast as they'd like," says Norm. "It's worse if something doesn't quite fit, so test all the pieces just to make sure." He recommends choreographing the entire gluing sequence, presetting all the clamps and numbering all the pieces. Using one of the new polyurethanes will allow more setup time.

The most recent additions to Norm's adhesive arsenal are two very different forms of polyurethane. The liquid version, the color and consistency of maple syrup, has bonding power and water resistance that exceed those of most other glues. Yet the formula also has a quirk. When liquid polyurethane cures, it foams, expanding to three or more times its initial volume and often oozing out of even a tightly clamped joint. This tendency to bubble can help fill small gaps but, says Norm, can also be a nuisance. "I have to come back and scrape off the excess." His favorite is a marine-grade polyurethane adhesive sealant, which he first used on the butt joints of some redwood window frames. "The stuff is so strong you'd have to destroy the pieces to get them apart," he says. "But it still has a bit of flex, and that's important. People don't realize how much wood moves."

Beyond hide glues, powder-resin mixes and whites, yellows and polyurethanes is a quartet of more specialized wood adhesives. Hot-melt glue, squeezed from an electric gun to bond wood in seconds, is handy for crafts and model making. Cyanoacrylate, the super glue that Eastman Kodak accidentally discovered in 1958, bonds nearly as fast but is expensive for anything besides small fixes like regluing lifted veneers. Two-part epoxies are a high-strength adhesive that excels at filling gaps and holes. Contact cement is the best choice for bonding veneers and laminates to wood, plywood and particleboard. The new low solvent formulations—developed to comply with state and federal air quality laws—contain about 90 percent fewer volatiles than their highly flammable predecessors.

Most woodworking projects, even sizable ones, consume only small amounts of glue, but it may be tempting to buy a large quantity to get a lower price. With some glues that can be a mistake because they have a limited shelf life. "Buy the smallest size you need," Norm says. "The label's usually pretty informative. And for many glues freezing must be avoided, so don't store them in an unheated garage or the back of a truck." ■

FOR SOURCES, SEE DIRECTORY—PAGE 117

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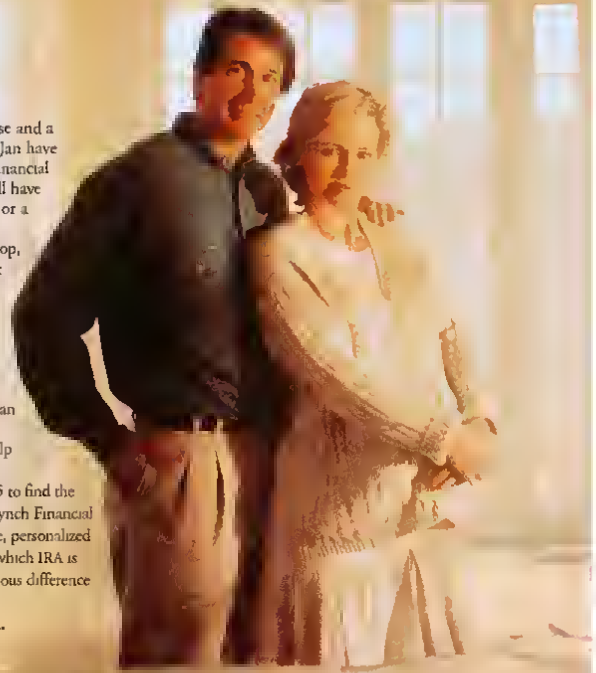

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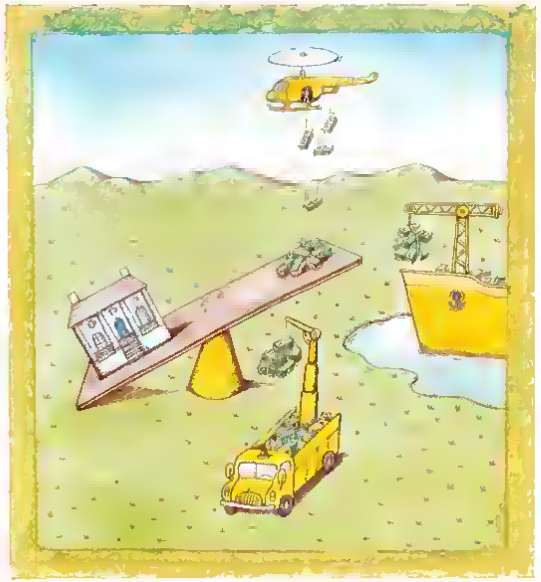

GET A MORTGAGE FROM A RAILROAD?

For a better deal, think about bypassing banks and other traditional lenders

Keith McSwain was between houses. He had just sold one in Atlanta—and netted $125,000—and was about to build a $600,000 contemporary on a golf course in nearby Duluth. But instead of spending the profit on down payments for the separate construction and mortgage loans his lender required, McSwain added $40,000 to the proceeds and put it all into a Merrill Lynch brokerage account. Using the future house and the account as collateral, he secured a 25-year, 7½-percent mortgage from Merrill Lynch—the full $600,000 paid out over five stages of construction—and saved $9,000 in closing costs. Says McSwain: "I went to our number-one mortgage bank here in Atlanta, and a loan officer told me, 'I haven't got a program that competes with that program.'"

Our booming economy has altered the lending landscape. Many cash-rich businesses—from brokerages to railroads—and even wealthy individuals have begun to offer mortgages, creating new competition for banks and other conventional lenders. "Mortgage lending has exploded in the last couple of years to encompass virtually

ILLUSTRATION BY PETER ELS

anyone who walks in the door," says Keith Gumbinger of HSH Associates, a company that keeps tabs on the mortgage industry. The trend gives fiscally healthy borrowers more opportunities for better terms. And those with less than stellar credit histories—people often exploited by conventional lenders—can now borrow at reasonable rates.

For some like McSwain, financing may simply be a matter of leveraging personal assets, an oft used maneuver that some brokerages have turned into formal mortgage programs. McSwain's deal requires that he keep investments equivalent to 39 percent of the value of his new house in Merrill Lynch accounts for at least a year. The percentage could then drop to as low as 20 percent, depending on the house's value. Marc Crawford, vice president of marketing at Merrill Lynch Credit Corporation, advises clients to compare the cost of financing with the return on their investments. "If their stock earns, say, 9 percent and the after-tax cost of a mortgage is 6 percent, they should keep those funds invested," McSwain speculates that his account could earn significantly more than the interest he's paying on the loan. "I'm hoping the money that's invested will pay off the mortgage in 10 to 12 years," he says.

Of course, most would-be buyers don't have tens of thousands of dollars in uncommitted cash or securities to pledge against a loan. But many secondary lenders, as these alternative sources are called, don't require any more—and may take less—down payment than conventional lenders do. Lending isn't their primary business, and they don't deal directly with borrowers, so mortgage hunters must first hook up with an intermediary, an independent mortgage broker.

Unlike a broker who works with just one or a few conventional lenders, an independent broker has a long list of wholesale and retail lenders, sources that would never pop onto the typical mortgage hunter's radar screen. And who they are doesn't really matter anyway, HSH's Gumbinger says. "In today's financial climate, it's the product that counts."

Borrowers with good credit ratings have an excellent chance of negotiating a favorable deal through one of these brokers. "You're part of a dwindling pool," says Gumbinger. "You're an actively sought commodity and can demand better service, a cut in the rate and lower fees." Nevertheless, Gumbinger acknowledges, how applicants come out depends on their negotiating skills. "Timidity won't get you much in this game," he says.

Independent brokers, as much as they like grade-A borrowers, don't shy away from those with tarnished credit records. Neill Fendly, president of Pathfinder Mortgage Company in Phoenix, helps people secure financing when others won't. For the most part, says Fendly, banks automatically down rate an applicant with blips in his credit history. "You can't apply the same cookie-cutter guidelines to everybody," he says. "When you do, you alienate a large number of people."

Fendly tells of one 40-something couple who came to him a year ago. The wife, who was terminally ill with cancer, had tax liens from a previous marriage and unpaid medical bills. The couple had low credit scores and little cash for a down payment, and they had been turned down by several other lenders. Through Pathfinder, however, the couple got a 30 year, 8¼-percent mortgage from a wholesale lender. They had to put only 5 percent of the purchase price down, and the fixed rate was just half a point above what the best borrowers could get.

Credit-worthy borrowers who only lack down-payment cash can tap their 401(k) plans or life insurance policies. Rules and procedures vary by employer and insurer. It may be possible to borrow the entire cash value of a whole-life policy, but 401(k)s typically have a borrowing limit of about 50 percent, maxing out at $50,000. And the employee must usually pay back the money. Should he leave the company before the loan is paid, it will come due. If it's not paid, says economist Paul Yakoboski of the Employee Benefits Research Institute, "It becomes a premature distribution and is subject to income taxes and a 10 percent federal tax penalty." Another downside: In the eyes of any lender, this type of loan adds to the borrower's total debt, which may push it over the typical limit of 36 percent of gross monthly income. Overall, 401(k) loans are risky, says personal financial planner Ron Roget. "The temptation is not to pay the money back, which means you are mortgaging your retirement." Anyone who borrows from a savings plan, says Roget, should "continue to make contributions and pay back what you've borrowed."

Given the wide range of financing options now available, most mortgage seekers can avoid borrowing from retirement security for a down payment. If minimizing the size of a mortgage is a priority, tapping a parent or other relative for a loan may be more cost-effective—provided the terms are spelled out to everyone's satisfaction. After all, there's no point getting rid of a borrowing headache if the cure brings on a family migraine. ■

Double Deal

A slow market or a marginal property sometimes forces a seller to provide mortgage financing. Yet while this tactic may attract more potential buyers, it still leaves a seller holding a mortgage note and paying off his original mortgage with the buyer's monthly payments. But sellers, like buyers, can tap alternative capital sources and dispose of their property through the magic of the simultaneous close. In this deal, the seller essentially passes the mortgage note to an investor at the same moment that he receives it from the buyer. His link to the investor is usually through a note broker, who discounts the total amount of the note by up to 15 percent. (For example, if the seller had a $100,000 note, he would get a lump-sum payment of $85,000 from the broker.) Note brokers are a storefront for investors and institutions that wish to remain invisible to customers, often because they aren't planning to hold the note long. In the secondary mortgage market, a note can be sold several times. A real-estate attorney is probably the best source for finding a note broker. The broker should be licensed by the state banking authority. A resourceful buyer may want to introduce the notions of seller financing and simultaneous close by setting up a relationship with a mortgage note broker before making an offer. The broker can spell out the provisions of the loan and soften the delivery, especially for sellers who know nothing about this kind of deal.

FOR SOURCES, SEE DIRECTORY • PAGE 117

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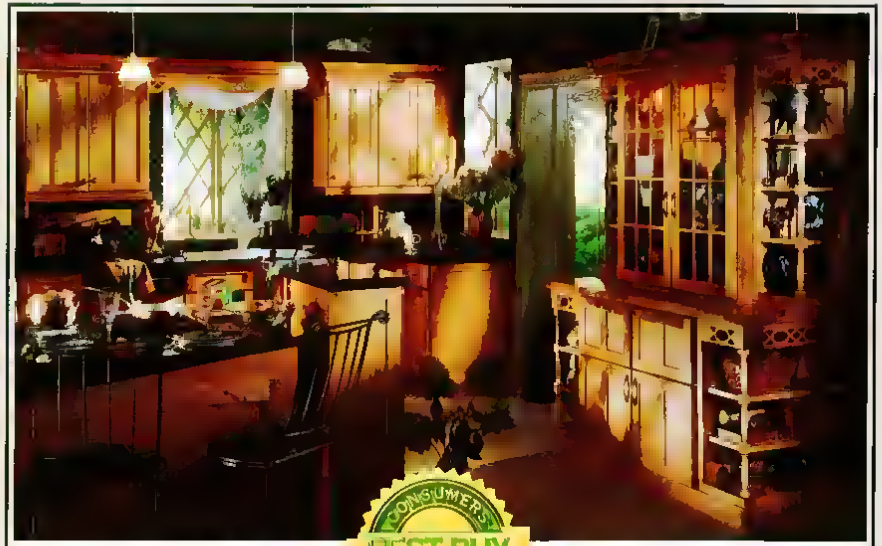

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BY DENNIS WEDLICK

ADDING FIREPLACES

The most cost-effective, not to mention dramatic, change you can make

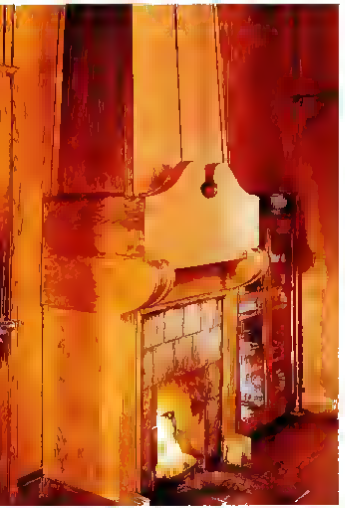
A 35-foot-high fireplace, left, dominates the living room of a Long Island summer house, below. Inexpensive veneered plaster and brick frame the steel box.

Ask any real-estate agent. Everyone wants a house with a fireplace. Even in Phoenix or Santa Barbara or Miami, the houses of envy usually have fireplaces. The appeal is as old as our relationship with fire and is strengthened by millennia of culturalization. Approaching a fireplace mantel in 1998 is not unlike arriving at a temple 4,000 years ago and discovering an altar alight with gleaming treasure. America's house history is rich in fireplaces. For several hundred years, settlers built their homes around huge core fireplaces that provided heat, a place to cook and an obvious gathering place for the family. But that long tradition came to an abrupt end after World War II, when developers and their banker financiers began making most of the design decisions in the exploding suburbs. Faced with an extraordinary demand for low-priced housing, builders maximized the number of bedrooms and minimized everything else. Out went fireplaces, screened-in porches, basements, gables, crown moldings, shutters, wood shingles and detailing of

PHOTOGRAPHS BY MICHEAL McLAUGHLIN

all kinds. Out went all the romance.

Half a century later, there is a nationwide quest for comfortable nests and a nostalgic longing for prewar houses. With not enough old houses to go around, a lot of modern nesters lack the centering focus a fireplace adds. Eager to add one to a living room—or to a kitchen, a family room, a bedroom, even a bath—home owners often find that masonry construction is so expensive they must think thrice before committing. Thus a contemporary alternative is winning a receptive audience—prefabricated fireplaces. These steel fireboxes with round metal flues, which can be buried behind drywall and detailing, can cost less than $3,000 installed, require no foundation work and need only about 2 inches of clearance from framing. Although the fire brick is missing, the beauty of a fireplace does not come from what it is made of, but from what surrounds it: the sculpture of mantels, moldings and facings.



A simple but elegant fireplace by architect Bernard Maybeck incorporates classical references in a surround built almost entirely of redwood. Two layers of stone above the firebox add to the vertical presence of the design.

A new fireplace is an opportunity to create a piece of art within the house. A fireplace without surrounding detail is like a painting without a frame—nothing has been done to enhance it. Staring at a black hole in the wall incites boredom, and it is important to remember that most of the time there won't be a fire in the box. Furthermore, home owners tend to arrange furniture to point toward the fireplace. The only thing to look at without a fire going is the creative structure around the fireplace.

Once you've decided to add a hearth, the first decision to make is whether the firebox itself should project into the room or align with the wall. I prefer a fireplace built into the room, because it offers more opportunity for shape. A projection measuring about 2 feet deep, 4 feet wide and 8 feet tall is delightful, like a piece of fine furniture. That's what makes an old armoire so lovely.

A built-out fireplace also offers the opportunity to create a templelike facade using the classical elements of a column: a base, a shaft rising up on each side and a capital in the form of a mantel. The flue is only about 12 inches wide in a prefab fireplace, but home owners can covet it with a huge hood that rises up from the mantel to the ceiling, creating a dramatic effect. Hoods with unusual slopes or curves can change the mood of an entire room. A curved hood looks especially attractive against straight walls. (Curved *walls*, on the other hand, are difficult to add to a house and difficult to furnish.) They need not be expensive, either. Drywall with simple wood trim works fine.

Proportions are critical in design decision making. Adding tiles or other noncombustible materials can camouflage a poorly shaped firebox opening. The eye will see the proportions of the facing materials, not the hole in the wall. A tall and skinny fireplace surround, kept as tight as possible to the firebox, will give a low ceiling the illusion of height. Conversely, a wide squat fireplace will lower a ceiling that seems too high and create an effective horizontal look in the room.

The most important thing to remember is that a fireplace imposes itself on the entire house. This is where visitors form their impressions of the materials and craftsmanship used throughout the house. A well built fireplace imbues the whole structure with a sense of quality. A shoddy surround will look as if it can be ripped out in 10 minutes.

The intriguing power of image and romance inherent in a fireplace can extend beyond the living room. In older houses, family dining rooms that once accommodated 10 often have space for a fireplace. Imagine the coziness in eating before a fire. Add bookshelves to each side of the hearth, and the room becomes a library as well as a dining room. A fireplace in a master bedroom can be more satisfying than building an addition. You'll get a master suite for a tenth the price of remodeling. A fireplace in the master bath offers a sense of resort-level luxury. Nothing beats sitting in a whirlpool bath and gazing at a blaze.

Wedlick designs many of his fireplaces, above, so the eye focuses on the space around the fire. He favors inexpensive pine moldings and drywall as well as prefabricated steel fireboxes.

My favorite effect is to add a fireplace to an entryway. People spend $50,000 on a grand staircase, believing it will set a majestic tone. A fireplace, for much less money, will seem even grander. Think about the bleakest day in winter. You open the door to greet guests. The first thing they see is a toasty fire. ■

PHOTO OR LEFT FROM *REINHARD MAYBECK: VISIONARY ARCHITECT* 1995, TEXT: SALLY WOODBRIDGE, PHOTOGRAPHY: © R. CHAIM BARNES, PUBLISHED BY ABBEVILLE PRESS. OTHERS COURTESY OF BENNIS WEDLICK.

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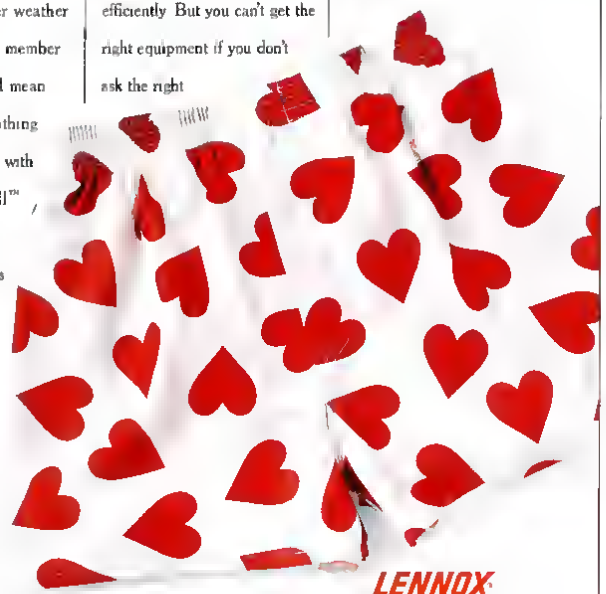

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LETTER from *This Old House*

LETTING GO

At the conclusion of a *This Old House* project, we throw a wrap party, rib the home owners a bit, provided they still have a sense of humor, and turn our attention to the next job. It's business as usual and, after nearly a decade of redoing houses, I've learned not to get too emotionally attached.

The Milton house, though, is not typical. We tried to make it into the type of house in which we would want to live, work and raise our families—the ultimate cocooner's house. We said at the outset that we wouldn't want to sell this house if we were successful. Sure enough, we don't want to sell it.

Central to cocooning here is the workshop, with its ultimate collection of boys' toys. The shop has elicited groans of desire and longing from every guy who has walked onto the job site. "Forget the house, I'll live in the shop" is a routine comment. And the house is hardly an afterthought, with its state-of-the-art media room, wine cellar and Julia Child/Marian Morash/Phil Mossgraber kitchen. Yet, as terrific as these spaces are, they do not represent the real lesson of the Milton project, which to me is that all the tasks involved in restoring and renovating the house were done in the proper sequence, with the best technology and craftsmanship.

The house was built in the 1720s, and it represents a piece of the history of Milton, Massachusetts. The front facade with its antique clapboards and window sash is original, as are the front parlors and bedrooms. We stripped paint where necessary to restore the original look but otherwise treated these areas with a light hand.

Not so with the old kitchen, library and mudroom. Built or modified in a later era, they needed a lot of work. We demolished and rebuilt them. The inadequate heating, plumbing and electrical systems also had reached the ends of their useful lives. We ripped them out and replaced them. Even the barn got a major structural and cosmetic overhaul. And one of the most significant jobs is the least conspicuous. Working from several late 1800s photographs, we reinstated the old carriage drive, sweeping it up through the property to a circle next to the house and finally across the grounds to the barn.

A major rehab like this does not come cheaply. We spent about $350,000 on top of the $415,000 purchase price. Donated materials and manufactured items totaled about $195,000. We're going to take sealed bids for the property, and we hope it will fetch $1 million. Whoever submits the winning offer will be getting a valuable house that, with routine maintenance, will last another three centuries. We will wish the new owners all the best. And if they're not woodworkers, I know a few guys who will be glad to help them get rid of those tools. —Steve Thomas

PHOTOGRAPH BY KELLER & KELLER

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SATURN

horse logging in Maine

Jim Carville harnesses the muscle power of Belgian Percherons as big as bulldozers to harvest trees more than a century old

ABOVE: *Dragging logs for several hours puts a strain on even the strongest draft horse. Heavy cotton pads stuffed under the horse's leather collar absorb sweat and reduce chafing.* RIGHT: *A 112-year-old pine—70 ft. long and 28 in. across, weighing 3,200 lbs.—lies ready to challenge the beast of burden.*

BY [illegible] ENGLEY
PHOTOGRAPHS BY DAVID BARRY

Jim Carville cinches the choke chain around a snow crusted pine log. "Hup," he says softly. Duke and Luke, tawny Belgian Percherons, press slabs of muscle against their collars. Leather creaks. Hooves bite the gray clay in this boggy stand in Brunswick, Maine. The chain snaps taut. The 800 pound log, cradled in ice, pops free and scrapes across the frozen ground behind them, shedding a trail of splintered bark.

At the drop-off point, Carville unsnaps the 3-inch steel hook and frees the pine, and the team suddenly spooks and gallops up the rise. Yanking furiously at the lines, Carville bellows, "Ho! Ho! Ho! Ho! Ho!" No use. Each horse weighs 1,700 pounds. Carville weighs 170. He's mostly sinew and gristle, but so are the horses. They pull him as easily as he could pull a leashed Chihuahua. Carville leaps tree roots and ducks limbs for 20 yards until the horses finally halt, still restless, mickering and nipping at each other.

"Usually, I hitch a heavier log to them first thing, to get the vinegar out," says Carville, angry

and a little embarrassed, as he chains the pair to a pine log weighing more than a ton. "Steady. Easy now."

Jim Carville is a horse logger, a modern variable in an old equation: human intelligence plus animal strength equals usable lumber. Some 3,000 horse loggers ply American forests, from the towering Douglas firs of the Pacific Northwest to the brooding loblolly pines of the Gulf states to the mixed stands that blanket New England. Constrained by the humble physics of blood and bone, a draft animal can't match the relentless efficiency of a modern harvester, a 30-ton diesel juggernaut brandishing a hydraulic claw that handles forested tracts the way Godzilla handled Tokyo. Such machines can grab, sever, limb and load 500 tons of timber a day, roughly 20 times what Carville reaps cutting and hauling selectively with Duke and Luke. "Working this way is quality over quantity," says Gregg Caudell, editor and publisher of "Horselogger's International Newsletter."

Carville chose Duke and Luke because they are equal in size and counterbalanced in temperament. Duke, 10, a former competitive pulling horse once ranked second in Maine, used to drag a sled loaded with more than twice his weight across fairground arenas. "It's difficult to believe," says Carville, shaking his head, "because he really doesn't care about working. He'd like to stand in the barn all day, eat hay and look out the window." Luke, 14, came from a historic-demonstration farm in Wiscasset, Maine. Schoolchildren would gape as the huge horse pulled a plow. "He's a nervous, aggressive horse. The owners were afraid with the kids around him. He bosses Duke around wicked, but he loves Duke too. If you separate them, Luke cries and bellows something awful. It's true that he needs a strong hand, but he's a hell of a worker once you get him calmed down."

"That's why Luke is Jim's favorite," says Carville's wife, Debbie. "They're just the same."

Carville's huge appetite for work astounds Debbie and their children, Jenna, 14, and Willy, 12. Month after month, after toiling 45 hours a week as a night-shift mechanic at a fiberboard mill, Carville puts in another 40 in the woods with Duke and Luke. "I come out here to work with him mostly because it's the only time I can see him," says Debbie as she watches her husband, ringed by a nimbus of oily blue exhaust, slash the base of a 70-foot standing pine with a mud-spattered chain saw. A lifetime of strenuous outdoor labor has shaped Carville's body: a fullback's shoulders, callused hands, a hide as tan as the geldings'.

The pine tilts north, about 3 feet out of plumb. Carville wants it to fall west. After sawing a notch on the west side and a shallow back cut on the east, he pounds two orange, plastic felling wedges into the back cut's north side. These nudge the trunk southward, though not enough to cancel the initial tilt. "Watch," whispers Debbie. "It will land just where he wants it." Sure enough, after Carville deepens the back cut, the pine tips, topples with a tortured crack and snap, thunderously smacks the earth and rests pointing due west beside the main track but not blocking it. Slashing and jabbing with his chain saw, he limbs the log, then chops it into movable segments, a process known as bucking. By eye, he reads the value on a scale of one (the highest quality) to four (the lowest). "I'll get 475 board feet out of this tree. The bottom of the trunk is all number-two grade. The top will go number four."

TOP: Carville's wife, Debbie, and son, Willy, hike to kibitz while he works. Willy has shown little interest in learning how to log. "I'm more into sports," he says. BOTTOM: Partying and thrusting with his chain saw's 18-in. bar, Carville can limb a 70-ft. pine tree in just five minutes.

Taking up the lines, Carville commands, "Back up." Then he wraps the choke chain around the pine and barks, "Step over." As the sun climbs, man and horses fall into a rhythm: fell, limb, buck, hitch, drag, release, return, fell. The team starts to find its own way back to the drop-off pile and halt there unbidden. "You can see it now," says Carville. "They know what they've got to do."

Duke and Luke are natural environmentalists. When Carville takes them deep into a forested gully, they bob and weave around even the smallest saplings. "They take the easiest route—the route that does the least damage," he says. Compared to a skidder—a 10-ton tractor used for mechanized logging—a horse is a ballerina *en pointe*, its hooves tiny and inconsequential. As this day warms and the ice in sunlit glades begins to slush, Duke and Luke leave only isolated pocks and grooves. "A skidder would turn this whole area into a soup bowl," Carville says.

Carville, who is 36, discovered the benign practicality of using draft horses at age 7, when he pitchforked and stomped down hay in a horse-drawn wagon on his grandfather's farm in Lisbon, Maine, the same farm where Carville now lives with his wife and children. The elegant scheme his grandfather devised for unloading hay into the barn awed the boy. The team pulled a rope attached to a block and tackle, and a hay fork came down to hoist the whole wagon-load up to the loft. "It was just plain amazing. You could unload it all in 15 minutes." The typical setup—a tractor, baler, mechanical elevator and two-ton flat-bed truck—"would have been a lot more expensive and no better for his small operation. I was quite taken by the logic of it, even then."

That revelation, nestled in the bottom stratum of Carville's brain, began bubbling to the surface after he became a pulp logger in his early 20s. For more than a decade, he twiddled hydraulic levers on outsized yellow machines—skidders, harvesters, feller-bunchers—opening vast clear-cut fields in the northern Maine woods. "I got to where I couldn't stand it. It was just cut and go. So much beautiful wood, cherry, oak, you would just send to the chipper."

"The problem isn't so much the machines themselves. You can do careful work with a skidder," Carville says. "It's the expense. The machines cost $140,000. You had to keep cutting to make the payments. You couldn't stop to sort the wood, so it all became pulp." He nearly spits the last word. To Carville, a frugal, hardscrabble Yankee, such a thoughtless

Trussed in a dual harness known as a doubletree, Duke and Luke tow a half-ton pine log—and Carville—through the snow and slush. "When it gets cold and wet, sitting in a cab inside a big machine is tempting," says Carville. "But I really prefer the smell and the feel of working out here."

locating a horse logger

Horse loggers generally prefer to "stay out in the brush" rather than join groups, says Glenn French, president of the North American Horse and Mule Loggers Association. But several publications and associations can track down these independent souls. French's Oregon-based organization (8307 Salmon River Highway, Otis, OR 97368; 541-994-9765) has about 100 members, and French will make a "serious attempt" to find a horse logger who works a specified geographic area. Similarly, Gregg Caudell, editor and publisher of "Horselogger's International Newsletter" (HCO 1 Box 34-C, Keller, WA 99140, 509-634-4388), has assembled a list of horse loggers in many states, and he also engineers matches on request. Some states have draft-horse associations, which typically include both horse loggers and horse farmers and are listed on the Internet Web site http://www.access.digex.net/~katzen/plowing/index.html. County extension agents can help locate horse loggers as well.

After pulling logs for three hours, Duke, left, and Luke cool their hooves in a meadow. At ages 10 and 14, respectively, the workhorses have many productive years left. "You can work them up until age 20," says Carville. "A guy I know has a pair 23 years old that he uses. They can't go day in and day out, but they still go."

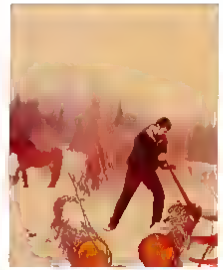
use of furniture grade woods constitutes criminal waste.

So nearly three years ago, Carville bought Duke and Luke for $1,500 apiece. He swapped some welding work for a 15-year-old harness, reconditioned an old 2½ ton truck to transport the team and began dragging trees. "I talked with some people who had done it, and they all said the same thing: 'Just do it. That's the only way to learn.'" That's dangerous advice for a logging neophyte, but Carville could already calculate a woodlot's board footage with a quick glance, wield his 12-pound chain saw like a fencer's épee and instinctively anticipate the wayward trajectories of massive logs and taut cables. Draft horses did not pull him into a new life. They were the essential missing piece of the only life he had known.

With his team, Carville removes enough trees to make a profit, but he leaves enough behind to stem erosion. "In a mixed plot like this," he says, sweeping a gloved hand to take in the pine, poplar, hemlock, gray birch, oak and ash, "you can take a selective cut every eight or 10 years, removing just the mature and overmature stuff. You open the forest canopy, let in more light down to the young trees, speed up the growth. Basically you are harvesting the interest, but the principal keeps growing. Do it right, and you can harvest forever."

Once Carville accumulates a dozen pine logs, he keeps the horses from roaming by tying them to a tamarack ("very tugged, but it twists wicked, a real garbage tree") and revs up the portable sawmill that he towed to the site behind his truck. The mill's gas-powered 24-horsepower band saw, gliding on steel tracks, can carve shingles, clapboards, dimension lumber, spindly lobster-trap lath or beams 20 inches square and 20 feet long.

Carville strikes numerous financial arrangements with landowners. This 15-acre tract belongs to Robert A. Brooks, an engineer whose son needs sheathing boards to build a porch and shed at his Victorian shingled cottage. Carville will give about 40 percent of the sawmill's output to Brooks's son and keep the rest as payment. Sometimes Carville buys standing timber outright. After felling and sawing, he sells the lumber to contractors or owner-builders for about two thirds of what lumberyards charge. Because Carville's overhead is comparatively minuscule, he still profits. Occasionally, he sells whole logs to a sawmill but, he says, "Generally they don't want to bother with the small amounts I can give them." Typically, Carville pays the landowner $65 per 1,000 board feet of pine (roughly the amount in four 50-foot trees with a 20-inch diameter at shoulder height). After Carville fells the trees and the horses drag them near a road, a hired truck transports the logs to his backyard. There, Carville saws them into boards and assembles these into shipping pallets. Sixty-five dollars' worth of trees makes about 65 pallets, worth $570. "See that piece of rot?" he says, tapping the chain saw bar against an oval scar of punky wood on an otherwise pristine piece of pine. "That would have made the whole log pulp grade, but I can slice that off and make a pallet."



A $25,000 portable sawmill allows Carville to turn a day of cutting into lumber on the spot. TOP: Wielding a tool called a peavey, Carville rolls a pine log onto the sawmill's pneumatic arms. MIDDLE: After squaring the log, he saws it into boards. BOTTOM: Redolent of sap, the freshly cut pine should air-dry for at least four months before it is used.

It takes Carville two days' hard labor to realize that $505 profit. Subtracting overhead, he estimates his pay at $20 an hour. "Owning my own sawmill, adding value to the wood, makes this viable. If you tried to do straight horse logging, selling logs to a mill, you'd have to be pretty frugal to survive, at least around here." Considering, he adds, "I could get more than I do now with the horses—I suppose. I'm really not a businessman. I don't charge enough. I know how to do it; I just don't like to do it."

"Jim charges what he'd like to pay," says Debbie.

By 2 p.m., sun glinting through a tuft in the clouds thins the ice shell on a stretch of road the horses must cross to return to the woods. Duke crunches through, whinnies and backs up. "They hate this ice," says Carville. He leads the pair up a hoof-scarred wooden ramp into the truck.

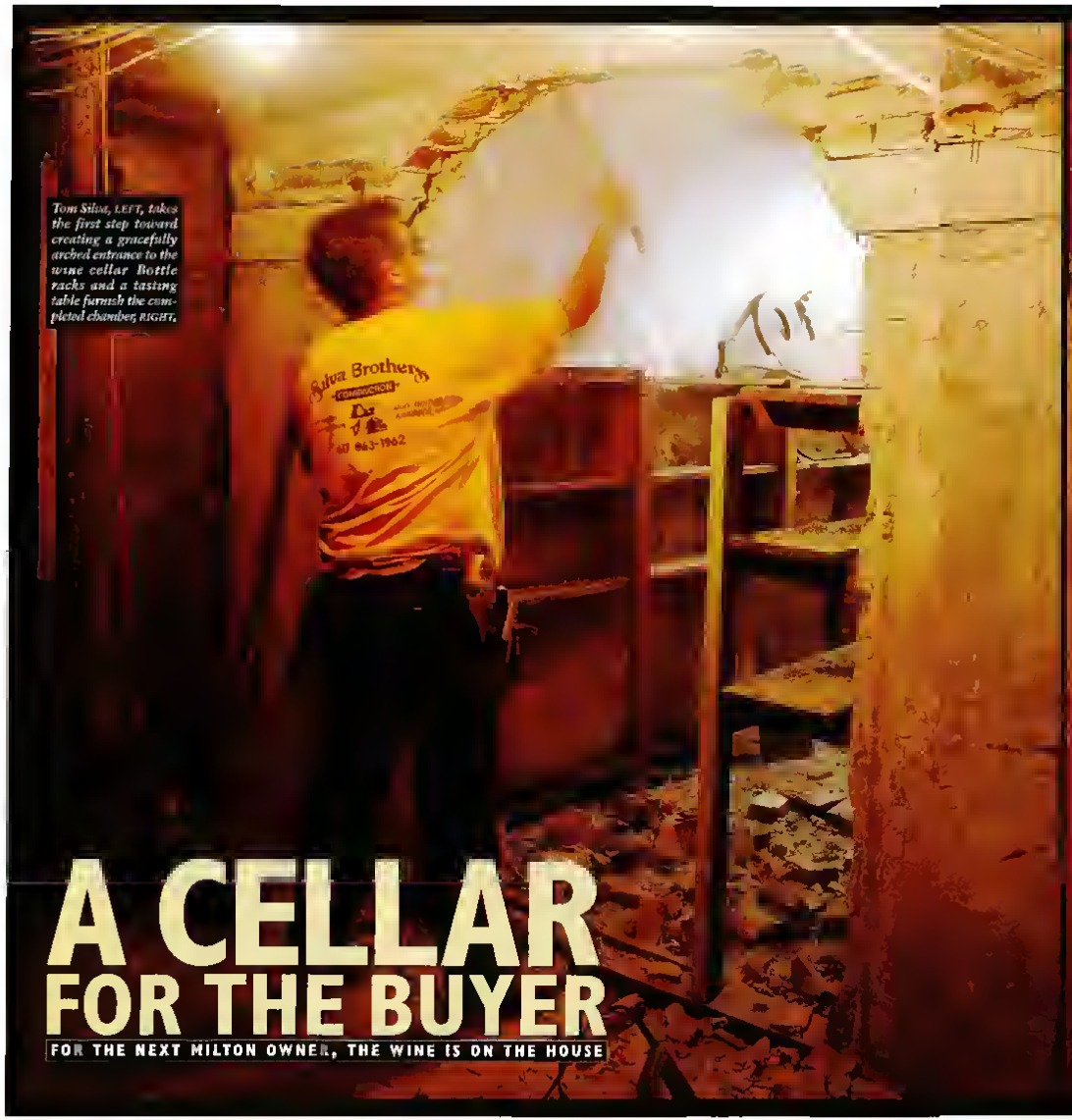
A short day. In one productive two day stretch last summer, working Duke singly to clear a house lot, Carville removed 20 cords of pulp and 2,500 board feet of sawlogs. For warm-season work, he uses a logging arch, a four-wheeled steel cart that grabs and lifts logs, easing the horses' load. Today, the team cleared only a dozen logs, but Carville bears no grudge. Machines, he says, balk sometimes too. Pistons seize, axles snap, someone forgets to bring along the 50 gallons of diesel a skidder drinks every eight hours.

Carville will stick with horses. He hopes to quit his night job and buy a breeding pair soon; horse loggers like to boast that reproducing is a trick that skidders have yet to master. Along with logging, Carville plans to acquire the 120-acre parcel adjoining his 10-acre spread and farm it with horses, just as his grandfather did 30 years ago.

The scheme won't make Carville rich, but his family will get by, and he'll be able to live with himself. "A lot of people hate their jobs. They talk about how they can't wait to retire. To me, that's crazy. Your job is what you do for most of the time you are alive. Last fall, I met a guy who was 62 when he bought his first horse. Now he's 71, still working the horses. He brings in 400 cords of firewood a year, all split and cut to stove length. Then he uses the horses to do his haying. He doesn't make all of his income at it, but he does as much as he can, and he enjoys it.

"That's what I want to do. I could do that forever." ■

FOR RESOURCES, SEE DIRECTORY—PAGE 176



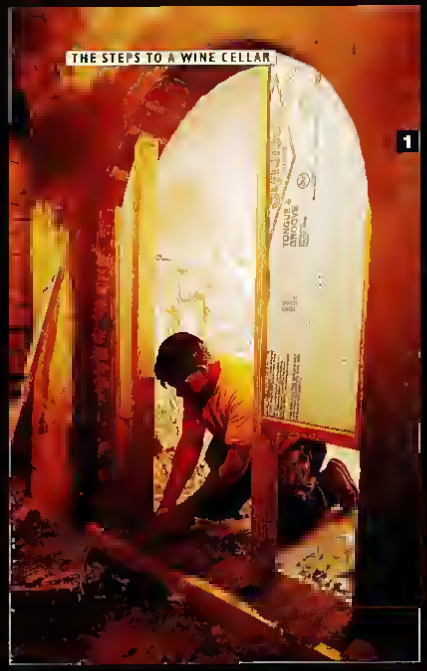
Tom Silva, LEFT, takes the first step toward creating a gracefully arched entrance to the wine cellar. Bottle racks and a tasting table furnish the completed chamber, RIGHT.

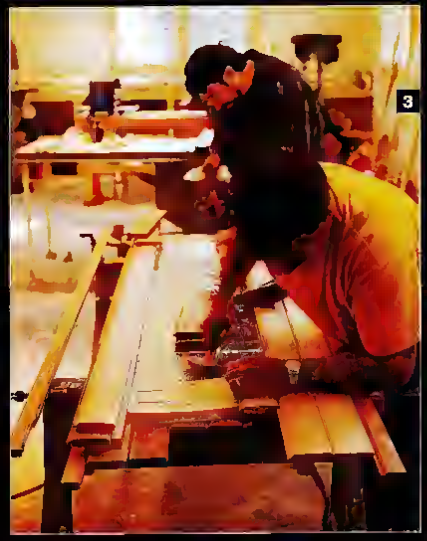
A CELLAR FOR THE BUYER

FOR THE NEXT MILTON OWNER, THE WINE IS ON THE HOUSE

The stairs creaked eerily that first day as *This Old House* director Russ Morash and series producer Bruce Irving crept into the Milton house basement. A dank, musty breath rose to meet them, and their eyes turned toward a dark chamber. Was that a faint scream from behind the wall?

BY JACK MCCLINTOCK PHOTOGRAPHS BY KELLER & KELLER





1. Because the chamber and cellar floors are uneven and at different levels, Tom builds another form for a threshold. "This will give a nice level place for the door." He then frames up the wall, sawing the tops of pressure-treated 2x4s to match the arch's curve and attaching them to the brick with construction adhesive and concrete screws. He sets the frame's feet inside the curb form and pours in quick-setting concrete to stiffen the wall and lock the parts together. 2. After sealing the perimeter with latex caulk, Tom screws in galvanized-wire lath, which he covers with plaster. At every point, he fights off future damp with exterior-grade materials: pressure-treated lumber, foam insulation board instead of batts, galvanized-mesh lath and a rot-resistant cedar door and frame. 3. To make the door, Tom and *TOH* master carpenter Norm Abram laid out 1-by-4-in. strips of tongue-and-groove V-joint Western red cedar face down on sawhorses and pulled them together with bar clamps, creating one panel with a 10-by-42-in. hole sawed out for a glass window. For bracing and spacers, Tom cut scraps of spruce to size, planed them to the same thickness as the insulation and attached them to the back of the first door panel with glue and screws. He then cut insulation board and glued it between the spacers. He and Norm new glue and nail up the back side of the door, completing the sandwich. 4. The next day, they trim the cedar to size. The tricky part is matching the top of the door to the curve of the arch. Having traced this oddball on off the form he used to build the archway, Tom uses a band saw to duplicate it at the top of the new door. He built a cedar frame, laminating the top curve with ¾-in. pieces of cedar glued together and bent over the same arch-form.

Well, no. But peering beyond, the two men seemed to hear a single voice. It whispered: wine cellar.

With table-wine consumption rising, personal wine cellars are becoming as popular with social sippers as they are with thirsty connoisseurs. These spaces range from converted closets with no temperature or humidity control ($100 and up) to freestanding cooling units ($1,000 and up) to one of a-kind retreats such as the cellar behind the vault door at a former bank in Ohio ($175,000). Any nook big enough to accommodate wine racks and a cooling unit will do if it can be protected against temperature and humidity fluctuations, vibration, and direct light, any of which could upset the delicate chemistry inside a bottle.

With its rough stone walls and brick floor, the handsomely proportioned, cobwebby Milton chamber suggested a wine cave in France. Just over 8 feet deep and 5 feet wide with a barrel-vaulted ceiling that supports the dining-room fireplace above, the space had a neat, compact grace. And it was cool and dark—a good start on a wine cellar's ideal climate of 55 degrees Fahrenheit with 70 to 75 percent humidity. The cellar would nonetheless need custom-built wine racks and a special cooling unit supplied by Baltic Leisure, a Pennsylvania firm that specializes in wine storage. Baltic usually insulates a cellar and lines it with redwood or cedar paneling, but in this case *TOH* wanted to show off the rugged walls.

The chamber's only flaw was the entryway: a dull rectangular hole. *TOH* contractor Tom Silva took stock of the situation, picked up his framing hammer and began knocking out brick. He had a plan. He would turn the hole into an arch to match the chamber's ceiling, then create an arched door and frame. In the shop, he built a plywood form, duplicating the barrel vault, and installed it in the opening. That gave him a shape to fill in with brick and mortar. When he stepped back, he had a graceful brick-lined archway.

Next he needed to build a wall to frame the doorway. He recessed the wall an inch within the arch, leaving a curved edge of brick visible. Tom thought it would be nice to install the cooling unit (similar to an air conditioner) up high so the heavy, chilly air would fall and spread. But to do that, he would have had to notch the ceiling and arch, destroying its clean line. Putting the unit low to blow upward, however, would have required notching the stone foundation, which would have been much too labor-intensive. He shrugged. Design is compromise. The cooling unit squatted in the lower right corner, and the door went slightly to the left.

Tom's nephew Charlie Silva helped by cutting 2-inch-thick polystyrene insulation board to fit between the wall studs, and Tom sealed the perimeter with latex caulk. He screwed galvanized wire lath to the studs, mixed a batch of plaster, and troweled on a thick base coat, then headed back to the shop to build the door frame and door, a slab of insulation board 18 inches wide sandwiched between two cedar panels. Tom decided to finish the door with a double-paned window of tempered glass and a wooden pull.

After laying a second coat of plaster on the wall, Tom hung the door. He trimmed a little off the bottom, and it fit perfectly. Next came the racks, which hugged the right-hand wall and rested on a cedar platform that had been scribed and trimmed to fit the uneven brick floor. Nearly 7 feet long, 1 foot deep and 4 feet high, the racks would soon be stocked with wine donated by Richard L. Elia, a longtime supporter of WGBH and publisher of the *Quarterly Review of Wines*. He chose 240 bottles to represent a global variety of wines, from champagne to port—and to make the house even more welcoming to its next owner. ■

IN THE CELLAR

Wine expert Richard L. Elia donated $5,500 worth of wine for the Milton cellar. Among his offerings:

CALIFORNIA RED

1991 David Bruce Vintner's Select Santa Cruz
PINOT NOIR

1995 Charles Krug "Generations"
MERLOT

CALIFORNIA WHITE

1994 Ferrari-Carano Sonoma
CHARDONNAY

1995 Glorie Ferrer Carneros
CHARDONNAY

CHAMPAGNE

1988 Veuve Clicquot La Grande Dame

1989 Taittinger Comtes de Champagne

FRENCH RED

1990 Château Sociando-Mallet Haut Médoc
BORDEAUX

1990 Guigal Côte Blonda et Brune Côte Rotie
RHÔNE

1995 Auguste Clape Cornas
RHÔNE

GERMAN WHITE

1995 Maximin Grunhäuser Abtsberg Kabinett C. von Schubert schan Schlosskellerei
RIESLING

PORT

1994 Warre's

first houses

TO IMAGINE WNAT IT WAS LIKE TO LIVE HERE 300 YEARS AGO, TRY TO FORGET EVERYTHING YOU TAKE FOR GRANTED

WHICH IS HARDER? Imagining life as it will be in the future—say, 300 years from now—or life as it was in the past, 300 years ago? No matter which direction you look, forward to 2298 or backward to 1698, you find yourself obliged to assess the most essential elements of human experience, which are continuity and change. One way to grasp how far 2298 lies from the present is to ask what, in contemporary America, still survives from 1698. The answer, in purely physical terms, is not much. But does change in our physical environment—the circumstances of living—change who we are? And, if so, what can a house from that remote era—a house built before the American Revolution—tell us about the character of its inhabitants and, ultimately, about our own character?

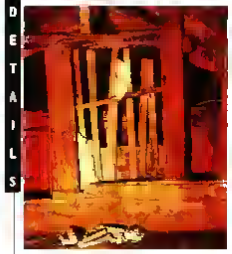
To get at these questions you can, of course, go to New England and visit a succession of early colonial-era houses. You will quickly gain a sense of the development that took place between, say, the Fairbanks House in Dedham, Massachusetts, a so-called First Period house built in 1637, and a more transitional structure like the Crehore house in Milton, Massachusetts, built in the 1720s and undergoing renovation by

BY VERLYN KLINKENBORG
PHOTOGRAPHS BY DUNCAN SIM

1655

Built like a Medieval manor, the John Whipple House in Ipswich, Mass., is a "millionaire's mansion of the 17th century," says its curator, Joanna E. Kyriazis. It began as a "half house" with only an 11-by-20-foot all-purpose room to the left of the massive chimney and a like-sized chamber above. Before the century ended, the builder's son—rich from the wool and timber trades—added six rooms to the right of the chimney. He also built a rear lean-to with slaves' rooms and the two front gables, which had been removed by 1725 but were reconstructed in 1953.

DETAILS

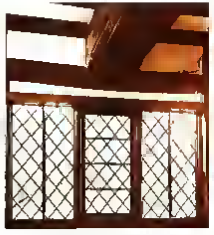


WATTLE AND DAUB

The precursor of today's stress-skin panels fills spaces between timbers at the Fairbanks House in Dedham, Mass. Builders stuffed clay mixed with chopped-up straw between thin strips of wood split from a log.

THE CHIMNEY

A bulging back flue is a distinctive feature of the Parson Barnard House in North Andover, Mass. Similar back flues were tacked on to many First Period chimneys to vent fireplaces added to lean tos.



DIAMOND WINDOW PANES

Reproductions of the John Whipple House were held in place by lead channels, and panels were reinforced with wood bars to prevent any sagging. Some windows were fixed, others opened casement style.

This Old House. You could almost imagine the houses rectifying their asymmetry as time passed, growing more formal and finished, more spacious and elegant as their owners and builders grew increasingly sophisticated and began to copy early Georgian architecture from England. But nearly any surviving house of such early vintage has been expanded again and again, making it difficult even on site to confine your imagination to the house's core as it was first constructed. This is certainly true of the Crehore house. Its original elements—hall, parlor and central stairrose—are clearly discernible, but it can be hard to put out of mind the warren of rooms that run away to the back of the house, rooms that will become, when the redesign is finished, a kitchen, laundry, walk-in closet and half bath.

Reconstructing the past requires research, but it also takes imagination. The day I visited the Crehore house, Andrea Gilmore, the architectural conservator who heads the Building Conservation Associates office in the Boston area, was taking paint samples from a relatively undisturbed remnant of window casing. Under a microscope, she examined the stratigraphy of paints and found a palette of colors several layers thick: blacks, browns, green, white, yellow, gray and a rust red. "This is a color typical of the 17th and 18th centuries," she said, referring to the original layer of rust red from the wood trim, and I could see her imagining the Crehore house in its original form.

You can get a vivid picture of what it might have been like to live in a Colonial house simply by performing a similar mental exercise, not in the presence of an architectural artifact but in your own home, not on a brief visit to an unfamiliar landmark but in a setting with which you are intimately acquainted. Try to imagine the changes you would have to make in your own house to turn it into a house of the kind a yeoman farmer might have built in the colonial era. (Because this is a thought experiment, there's no dust, no noise, no bills—only the seamless transformation of present into past.)

Start with the obvious. Completely disconnect your house from the outer world. No power, no phones, no cable.

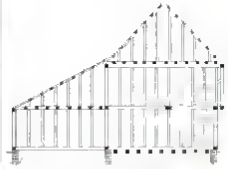
A FIRST PERIOD PRIMER

ILLUSTRATIONS BY MARK ROSENSTEIN

FRAME PLANS

ORIGINAL HOUSE

Professional carpenters, not do-it-yourselfers, built most First Period houses. Builders raised the timber skeleton in sections, inserted the studs, then tied everything together with lengthwise top plates.

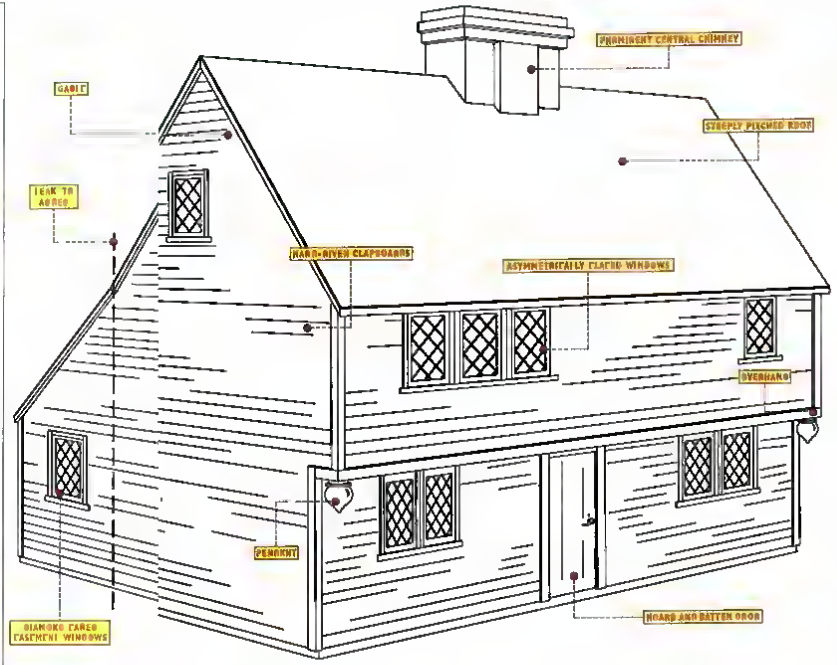


EXPANDED HOUSE

Builders patched on lengthwise additions seamlessly, but a telltale dip reveals where they married the lean-to's rafters to the house. The main roof sloped 45 to 60 degrees, the lean-to roof sloped less, creating more interior space.

SALTBOX

By the 1690s builders had started erecting lean tos as part of the original house by extending the rear rafters less steeply from the peak of the roof. The rear profile lost its dip, sloping smoothly, and the classic saltbox was born.



FLOOR PLANS

A First Period house typically had an original footprint of about 20 feet by 25 feet with a massive chimney at one end. Families cooked, ate and slept in one ground-floor room, called the hall, and in an upstairs "hall chamber." Most families soon added a ground-floor parlor and an upstairs parlor chamber on the other side of the chimney. When they needed yet more room, they bumped out the back of the house, gaining general storage space, a sleeping room and eventually a kitchen.

BRINGING THE FIRST PERIOD HOME

A few hundred First Period houses (built before 1725) are still standing, and you can buy one and live in it anywhere in the country—thanks to specialists who rescue these treasures before they're leveled for roads or shopping centers. David Ottinger of Deerfield, New Hampshire, recently put a circa 1720 house on the market as numbered parts. The house has little interior woodwork. "That mostly didn't come until later in the 18th century," Ottinger says. "A house this early depends on its frame." Although the structure originally stood in the environs of Boxborough, Massachusetts, it is now ready for reassembly at any location. The cost: $24,000. For $69,900, Howard Willard of Wethersfield, Connecticut, is selling parts of a more elaborate house, built in Glastonbury in 1703 and expanded in the 1750s to include a kitchen, buttery and borning room. In addition to the house frame, he has salvaged wainscoting, molding, beaded sheathing, handwrought iron nails and raised-panel fireplace walls, as well as more than 3,000 of the handmade bricks from three fireplaces, two beehive ovens and a smoke chamber.

Putting either house together again would not be cheap. "If you're very careful, the cost can be comparable to building a new house," Ottinger says. Willard puts the minimum expense of reassembly at $250,000: "That anticipates we would be doing it right—a wood-shingled roof, reproduction small-pane windows, new scarfed clapboards held in place with reproduction rose-head nails." But the owner of a reassembled First Period house would escape one old-house nightmare: "When you buy an old house on the hoof, you don't know how much rot is there," Willard says. "Once you have taken a house apart, it has no secrets from you."

1715

The Parson Barnard House—like This Old House's dream house project in Milton, Mass.—straddles building styles. The central chimney and floor plan are still typically First Period, but the symmetrical facade is characteristic of the Georgian architecture then in vogue in England.

1687

Even with siding, roofing and windows replaced during later eras, the Boardman House in Saugus, Mass., remains true to the 17th century with its oddly placed windows, its second-floor overhang and a gentle roof dip where the lean-to was added, circa 1696.

or satellite TV, no radio, no city water or sewer system, no natural gas lines. Less obviously, you would also have to remove all of the structures that mediate between nature and the house itself. Strip away the deck and the veranda, anything that eases the transition from the interior to the exterior. While you're at it, remove the garage and reduce the foundation to fieldstone. Suck out all the insulation except for bricks and clay or, perhaps, some tightly packed eel grass.

But how do you reimagine the interior space of your house to make it conform with late 17th- or early 18th-century standards? Instead of trying to calculate the difference in square footage—a relatively abstract exercise—imagine the difference in the contents of the two houses. A house, in one sense, is an inflatable structure. Every object purchased increases its interior volume. A TV, for instance, demands a certain viewing distance: the larger the TV, the longer the focal length, so to speak. (The same is also true of windows. A small window invites you to sit closer to it than a large window does. First Period houses have very small windows.) So what happens when you dispossess yourself of everything except the objects a colonist would have owned 300 years ago? The house deflates readily to scale.

This kind of mental auction is trickier than it seems at first. I happen to own a lot of books, and I seem to be perpetually searching out virgin expanses of wall on which to erect new shelves. But if I had lived 300 years ago in Massachusetts Bay, I would probably have owned at most a single shelf of volumes and more likely only a Bible and assorted unbound sermons and one or two devotional books.

Out goes nearly all the kitchen paraphernalia and the cutlery—especially the forks, which are not in common usage—and the china. Out go the sofas, the overstuffed chairs and the beds with box springs. The armoires and closets turn into one or two chests, which are more than adequate for your extremely reduced inventory of clothing. The dining room set and the breakfast nook devolve into a plain board laid across simple trestles.

And as the house shrinks, its rooms lose their specialization. Instead of a mudroom, kitchen, pantry, dining room, living room, den or study, and separate bedrooms and bathrooms, as well as a basement workshop or sewing room, there is a hall (perhaps 20 feet

by 25 feet) set on one side of the central staircase and a room called the parlor (slightly smaller) set on the other side, with two rooms upstairs. You may, perhaps, live in a house that has only a hall with a chamber upstairs. In the rear of the house, there may be a lean-to addition, which adds space for the storage of cheese presses, churns and farm equipment and will eventually include a kitchen. But for the most part, all the living you have to do—and all the living of everyone else in the family—will be done in the parlor and hall, where the warmth of an enormous fireplace subdivided into fires with several different purposes can make itself felt. For everything else, you must seek the outer world, which luckily is near.

As the house changes dimensions, other transformations occur as well. The doors, which grow narrow and short, are now made of boards and battens. The roof steepens dramatically. The framing, invisible in a modern house, becomes prominent and swells to massive proportions. You become intimate with the textures of wood—pine, black, red and white oak, chestnut and cedar. Wood is everywhere: roof shingles, clapboards, flooring, furniture, a virtual symphony of wood grain. When the technology of lumber production becomes more sophisticated in the 19th century, houses will be built from lighter and lighter members. But the massiveness of the timber framing in a house constructed during the colonial era is not just a technological artifact. It also acknowledges the wealth of New England's raw materials: its forests. The stoutness is in itself a gesture toward a harsh world, a defiance of sorts.

And yet as you picture life in such a house, for everything you remove in imagination from your present life, you must preserve—even add—something too. Surviving prerevolutionary houses—whether First Period or transitional, forward-looking ones like the Crehore house—vividly attest, albeit very differently, to their owners' concern for balance and proportion, their sense of texture, their attraction—always bounded by financial and technological limits—to ornamentation that arises from well conceived function. Perhaps the most beautiful thing I have ever seen in a house—modern or ancient—lies concealed at the heart of the Crehore house. It is an opening under the central staircase, next to the brick chimney. I crept through a tiny door, shone a flashlight upward and gasped. Directly above me, caught in a shifting beam of light, was a bending and swooping of pure geometry, a chorus of bricks rising upward, hidden behind the only source of warmth in a house now nearly 300 years old. ■

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1637

The Fairbanks House, still owned by the same family after three and a half centuries, proudly wears its wrinkles—including a painted birthdate that scholars no longer think accurate. LEFT: Short doorways and low ceilings are common in surviving 17th-century houses, but tall visitors didn't always have to stoop as much as they do now. In the Fairbanks lean-to, the once-flat ceiling sags. BELOW: The sunning lean-to roof dominates the side view of the house, which also has later additions on both ends.

yankee ingenuity

Sawdust clouds billow, pneumatic nailers chuff, and bright white ribbons of insulated wire wend around beams nearly 275 years old. Yet the dream house project in Milton, Massachusetts, retains its Colonial majesty. "I think we've succeeded in walking the fine line," says *This Old House* master carpenter Norm Abram. "We're bringing in the modern conveniences but preserving the historic character."

True enough. Norm, *TOH* contractor Tom Silva and crews under their supervision have nailed, glued, screwed, buried and otherwise installed enough innovative features here to fill a home show, but not a single element looks out of place. Some are literally invisible, such as the one-pour concrete piers that undergird the deck and barn posts. Others convincingly mimic their historic counterparts, such as the macadam drive made of recycled asphalt and grit stone that resembles a well mannered gravel road. Still others are simply inconspicuous. The screens in the woodworking shop retract into white aluminum casings that blend into the white painted walls. "The new can nestle comfortably in the old," says *TOH* show host Steve Thomas, "if you are careful and treat them both honorably." Here, then, are the best of the clever new additions to a very old house.

BY BRAD LEMLEY

PHOTOGRAPHS BY KELLER & KELLER

CURTAIN CALL

"I love these," says Norm. So does virtually every visitor to the site. Daily, a small crowd collects around the dream house's 19th-century barn to see the illusion revealed. What appear to be two pairs of traditional swing-out barn doors—complete with wrought-iron handles, true divided-light windows and massive strap hinges—roll up in segments like typical suburban garage doors. Made of clear, heart redwood lumber screwed to a poplar-luan core, each door weighs 400 pounds, triple the average garage door's weight, and requires custom heavy-duty steel tracks. Such quality doesn't come cheaply: A single door, installed, costs $5,000. But door manufacturer Scott Hahn, who sold some 800 custom overhead models last year, predicts his doors will last 75 to 100 years if properly maintained. "I've built garage doors myself," says Tom. "I can tell you these are worth the money."

PAVE THE SWALES

John Louden McAdam (1756-1836), a Scotsman whose immodestly named macadam roadways speeded 19th-century travel in England, would easily recognize this updated version of his revolutionary paving system. "The composition is something like peanut brittle," says *TOH* producer Bruce Irving. In McAdam's day, the peanuts were a bed of stones, and the binding brittle was a sprinkling of fine sand or cinders. Today, paving contractor Larry Torti substitutes crushed recycled asphalt paving, securing the chunks by spraying on liquid asphalt. He tops the lumpy black goo with ¼-inch gravel, then mashes the whole to monolithic stability with a 10-ton roller. The finished road is so solid that a 30-ton truck will leave an impression, yet the look is pleasantly casual—more like a Nantucket scallop-shell drive than a blacktopped highway. Although the surface isn't quite as plow-resistant as asphalt, Torti says, "If you put skids or runners on the bottom of the blade, you can plow it fine." He adds that his macadam drives come in 14 colors, provide excellent traction on icy days and require minimal maintenance—just a new coat of liquid asphalt and grit stone every decade. "When you resurface, you can change the color if you want to." But perhaps the most appealing advantage is cost. Torti charges $7 per square yard for macadam versus $13 for asphalt. The reason: The 4-inch base of recycled asphalt chunks is a bargain. "I can get it for $3 a ton as opposed to $10 a ton for gravel," says Torti. "There are mountains of the stuff. I'm glad I could find a use for it."

SASH SAVINGS

All of the Colonial's original windows were basically sound but leaked around the sashes. Window restoration specialist John Stahl removed each bottom sash (the fixed top sashes didn't require treatment), planed the sides and bottom, and router-carved a ⅛-inch-wide by ⅜-inch-deep groove along sides and bottom and across the front of the meeting rail. He then pressed barbed nylon-pile weather stripping into the grooves and replaced each sash. "Replacement-window manufacturers have led everyone to believe that the efficiency of glass is what matters," says Stahl. "Actually, most heat loss from windows is air leakage around the perimeter." Stahl charges $125 per sash to cover labor and materials but adds, "Anyone who can remove a sash and handle a hand or power plane, belt sander and router could do this on their own."

HOT LINE

The roar of a woodworking shop (or your son's proto-Metallica band) is best sequestered in an outbuilding—but how to heat it without shelling out for a new furnace? *TOH* plumbing and heating contractor Richard Trethewey opted to transport heated water from the dream house's boiler to the workshop, some 125 feet away, via this pipe. Warm water courses through the 1¼-inch crosslinked polyethylene pipe, which is swaddled in a jacket of foam insulation 2 inches thick and buried 5 feet underground. After the water passes through the radiant tubing embedded in the shop's concrete floor, another insulated pipe returns it to the house's boiler. "The heat loss in transit is virtually nil," Richard says. Steve envisions the underground heat pipe opening up numerous design possibilities. "If you don't like the noise, the oil tank and the carbon monoxide risks of having a heat plant located in your house, you could install it in an outbuilding and use this to pipe in the heat," he says.

SWINGING SHINGLES

Traditional shingling, that repetitive Zen ritual of New England carpentry, gets turbocharged with the panelized system used on the barn and workshop. Instead of attaching thousands of individual shingles, Tom and his crew nailed up about 190 2x8 sheets of 5/16-inch plywood to which red cedar shingles had been stapled and glued at a factory. Tom says the panels (at $250 to $325 per 100 square feet) are roughly the same price as traditional shingles. But the cost of installation is significantly less. "This would normally have been a three-week job," says Tom (inspecting the new shingles with Norm and Steve). "We did it in a week and a half, with two men." A further advantage: The plywood backing adds some structural rigidity, stiffening the barn's aged pine-plank vertical sheathing.

POUR IT ON

Concrete pilings provide rot-proof support for decks and other outdoor structures. Making the pilings' inverted-mushroom shape usually requires two pours: first to create the wide footing, then to fashion the narrow concrete column atop it. But these bread plastic pans, slipped into standard fiberboard column forms, allow contractors to make the footing and column with just one pour. The pans cost $14 apiece. "You'd spend more than that in labor costs alone, messing with a two-stage pour," says Tom, who used the system to create supports for the posts in the barn and the deck in the workshop. An inverted pan can also serve as a convenient funnel, directing concrete into a fiberboard column.

RUN A-MUCK

Dizzying heights and rotting muck make cleaning gutters a dreaded semiannual chore. But clogged gutters can ruin a house by causing backed-up rain to drip onto walls and sills below. After a long quest, Tom discovered an attractive debris-shedding gutter that will limit the need for future roof raking at the Milton dream house. The curved hood deflects leaves, twigs and pine needles while allowing water, which clings to the curve due to liquid adhesion, to dribble into the trough. "I wanted to test the gutter, so I installed one on my own house seven months ago," Tom says. "So far, it's working great." Tom also admires the low profile. "It doesn't look like a gutter, it looks like a small molding detail." Formed on-site from a single seamless sheet of heavy-gauge aluminum, the installed gutter costs $7 to $10 a foot, about $2 to $4 more per foot than a top-quality seamless open gutter. If the gutter clogs, the dealer will clean it for the original purchaser at no charge.

SCREEN GEM

The typical exterior-door configuration—screen door swings out, main door in—eats interior space and stifles easy passage with an armload of groceries or lumber. So in the woodworking shop, the French doors swing out over the deck, and workers installed ingeniously designed screens wrapped around side-mounted spring-tension rollers that unfurl across the openings only when needed. At $300 per individual unit (or $600 for a pair needed to cover a French door opening), "it's probably overkill for a shop," says Norm. Still, he says that he would have used the screens on his own house, built in 1992, had he known of them. "I like that you don't have a screen door constantly covering the French doors. You get more light and a clearer view."

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TURN TURN TERNE

The roof atop the new workshop resembles terne, sheets of steel coated with lead and tin that have capped New England buildings for more than two centuries. But the alloy that coats these panels became commercially available only in 1972. Steel sheets 1/30 of an inch thick are dipped in a bath of 55 percent aluminum and 45 percent zinc, then painted with a high-performance compound chemically similar to Teflon. Rain, snow and untethered people slide right off. To install a standing-seam metal roof like this one, workers traditionally used iron pincers and muscle to bend up each panel's vertical seam and crimp it into a watertight embrace with each adjoining panel. But a portable computerized hydraulic-electric machine formed these panels on-site, ingesting raw sheet goods from a roll and spitting out perfect cut-to-length panels. Contractor Al Smith (rear) and his son Jeff placed the panels on the roof, then piloted a power seamer that double-folded each panel's seams together. At $500 per 100-square-foot section installed, this roof is triple the cost of asphalt shingle. But the paint alone is guaranteed to last 20 years. Angelo Borzillo, inventor of the panel's unique coating, says field inspections of 82 industrial buildings topped with the panels in the early 1970s indicate unpainted panels will last as long as 30 to 40 years. Painted every 20 years, the roof should last indefinitely.

POTS AND PLANS

Julia Child, the American cooking goddess, gets a taste of the Milton dream kitchen—and declares it very good indeed

BY BRAD LEMLEY

The kitchen of the *This Old House* dream house in Milton, Massachusetts, has yet to produce a boiled egg, much less *paupiettes de volaille Florentine*, but Julia Child can smell the potential. "It will be wonderful and beautiful," she says, perched on a stool in the raw space, formerly a study, at the south end of the Colonial house. "You've got the sun and the view. It's jolly!"

Resplendent in a green-checked blouse, floral scarf and creme fraîche-colored slacks, the famed PBS doyenne and master of French cooking has dropped by the sawdust strewn site to lend advice on kitchen design. Marian Morash, chef of the PBS series *The Victory Garden*, and *TOH* host Steve Thomas listen as Child imparts insights based on 50-odd years' sautéeing, poaching, broiling and baking in kitchens throughout the United States and Europe.

"I see this as a kitchen/dining room, really, with your big table here," Child says, spreading her arms to encompass the center of the room. "In the old days, food would appear in the dining room as if by magic. Nowadays, people cook and eat in the same place if the space is big enough, which this is."

Child applauds *TOH* for placing the sink under the center window that overlooks the 19th-century barn. Even in the dishwasher age, she says, it's "nice to have the sink where you have the view. At my house, we have no view at all. You just see the neighbor's house."

She also likes vinyl floors ("Tile is lovely, but it kills your feet") and wooden countertops ("You just have to sand every four or five years") but professes neutrality on the hoary gas-versus-electric stove battle ("You can have either one. We had a quick-heating electric stove on the *Cooking in Concert* show that worked very well").

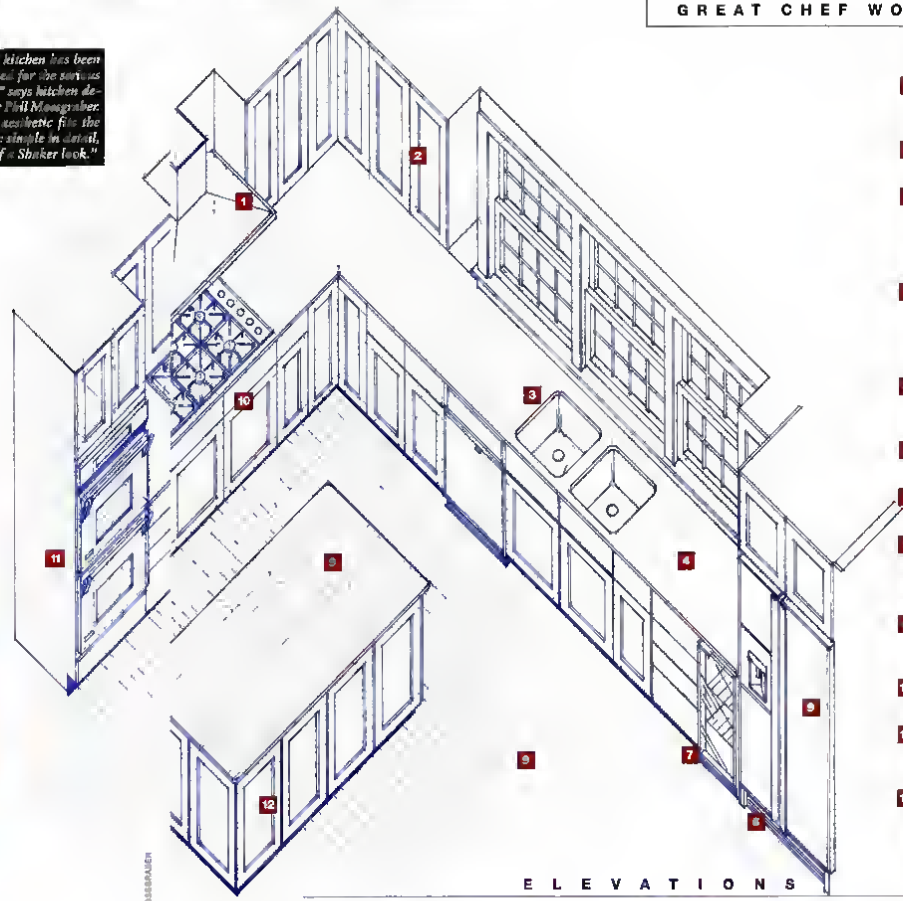
Julia Child and sister cook Marian Morash walk through the Milton kitchen, imagining the perfect setup, including a sink with a view.

Child's overarching kitchen design rule: "The kitchen should be completely comfortable for the cook." At her house, the counters are 38 inches high, 2 inches higher than average. "I'm over 6 feet tall. If very small people—say, 5 feet tall—need to cook in my kitchen, too bad for them. They can stand on stools or something." ■

PHOTOGRAPH BY KELLER & KELLER

A KITCHEN EVEN A GREAT CHEF WOULD LOVE

"This kitchen has been planned for the serious cook," says kitchen designer Phil Mossgraber. "The aesthetic fits the house: simple in detail, sort of a Shaker look."



7 **Stainless steel hood that sucks air at a powerful 1,300 cubic ft. per minute**

2 **Maple cabinets stained off-white**

3 **Cast-iron sinks, 10-in. deep and coated in porcelain enamel, with single-lever high-neck brass faucet and hand spray**

9 **Blue-grass soapstone countertops, as heat-resistant as granite but naturally low-luster in appearance**

9 **Counter-depth 24-in.-deep refrigerator with ice and water dispenser in door**

8 **Stainless steel fronts on all appliances**

7 **Wine cooler with glass front**

8 **Wide-board "floating" pine floors that coordinate with the rest of the dream house**

9 **A butcher-block top, per the recommendation of Julia Child**

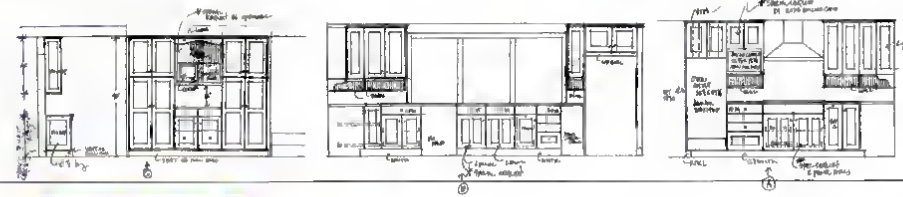
10 **High-output gas cooktop with six burners**

11 **Double ovens: upper for convection and lower for bake/broil**

12 **Island cabinets—with cutlery dividers, a knife section and a bread drawer—in blue to complement counters**

ELEVATIONS

WEST NORTH EAST



ARCHITECTURAL RENDERINGS BY PHIL MOSSGRABER

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an american craftsman

door maker

PETER GOOD'S PURSUIT OF THE PERFECT PORTAL

"What makes you think I'm eccentric?"

Peter Good asks this question as he removes his glasses and, with rotating thumbs, polishes away a fine film of sawdust. He returns the glasses to his face and smiles. Leaning against his shoulder is one of two Honduran mahogany doors he made for fun more than a decade ago. He built and shipped the doors to Brazil, where the esteemed sculptor Paulino Lazur carved elaborate designs into them—months of work that cost Good $3,600. The doors came back as beautiful as Good had imagined. Ever since, he has been shuffling them out of the way in his cramped workshop in Oakland, California. They're still for sale at $12,600 each, although he might let them go for less.

"You want eccentric?" he says. "I'll show you eccentric."

In 23 sawdust-caked boxes in Good's sawdust-caked workshop are 11,000 electron tubes that he plans to incorporate into several doors. For one door, he plans to station about 100 tiny tubes in parallel rows between two pieces of glass held together by a wooden frame, then pour clear liquid plastic resin between the glass. The resin will harden, encasing the tubes in a transparent tomb.

"Won't that make a neat door?"

Then there's the door diagram that Good drew after seeing *Star Wars*. He liked the scene in which Han Solo and Chewbacca are escaping from the Death Star and outrun the Storm Troopers as a door behind them appears to close in a diamond shape from four directions. That door fascinated Good, who figured out that it was most likely an optical illusion created by panels that opened and shut sideways on a rolling track. He was going to build a model to recreate the illusion and send a video to *Star Wars* creator George Lucas. But he never got around to it.

"I wanted to say, 'Hi, George. I figured out your doors!'"

And, finally, there's the door that began as one thing and is becoming something else entirely. Good planned to build a door with a stained glass scene of a stream running from a mountain waterfall through a jungle into a series of bubbling pools. Then he got to thinking. Wouldn't it be interesting if real water were running in the stream inside the door? And wouldn't it be even more interesting if the stream's water actually ran outside the glass?

BY WALT HARRINGTON

PHOTOGRAPHS BY MICHAEL LLEWELLYN

Wielding an air gun, Peter Good pins East Indian rosewood moldings to a mullion of a bubinga-paneled door while Douglas fir stiles and rails salvaged from old packing crate. "I consider the material to be like a person," Good says. "I talk to it: 'Come on, baby. I'm working hard here. Let me put you together.'"

Physics commands that water adhere to virtually any surface. But what about the splash when the door opens and closes? Well, why not have an electric eye that turns off the water pump when people get within, say, 10 feet and doesn't turn the pump back on until the door closes behind them. "Hey, I can do that," Good thought. And so he is, although he has no idea who will buy it. He rotates his thumbs to clean his glasses and smiles.

"See, I'm not eccentric."

Peter Good builds beautiful doors. "Doors are the only thing I do." For 28 years, he has built 10 to 30 custom doors a year. Most are straight-ahead doors for people's houses—doors of fir, pine, walnut, mahogany, rosewood and teak, but doors that can't be bought in stores, doors that boast a creator's touch. Each costs $3,000 to $15,000. Good works 7 a.m. to 4 p.m. weekdays, no weekends. He takes three vacations a year to New York, one to Hawaii. But he has no sick leave, no paid vacation, no company retirement. He pays for his own insurance. He is not rich, but he has never thought about working to become rich. "I thought about doing what I wanted to do. It's a matter of where your values lie."

A Good-designed door made of Honduran mahogany blocks, 3 in. by 7 in., bordered with a narrow band of walnut mimics the pattern of a brick pathway.

At 59, Peter Good believes his life is nearly perfect.

"I am a fortunate man."

Good works alone in his shop, a small, white, peeling garage that from the outside looks as if it might fall over. Inside, it looks as if it might be held together by spider-webs and sawdust. Except for his cat Minou, Good doesn't want visitors. And for a practical reason. He can't talk and do much else at the same time. When he talks and drives, for instance, he always ends up going slower and *slower* and *slooower*, until his wife finally says, "Peter, speed up." So he sure can't talk and run a table saw. Besides, he likes working by himself.

Good drives in from the suburbs weekdays at 6 a.m., gets to the shop and throws a few waste sticks of deodar cedar into the woodstove to nip the early morning chill. The wood is so fragrant it smells almost like cologne. He eats his own homemade granola topped with banana and papaya, drinks aged Indonesian decaf, reads the paper, pets Minou, then starts work.

Today, work is a four-panel door that he will make with stiles and rails of Douglas fir, panels of Central African bubinga and moldings of East Indian rosewood. Good salvaged the fir from a company that was getting rid of 45 year-old wooden pickling vats the size of brewery tanks. The outside of the vats' 3-inch thick beams was mealy and had to be planed off, but the pickled side was hard and fine. Good bought the rippled pink bubinga heartwood 15 years ago for what seemed then like an outrageous price. Today, bubinga this magnificent is hard to find at any price. The rosewood, a purple tinged variety that Good loves, has been knocking around the shop for years, waiting for the right door.

This is the right door because Good is making it for his own house, a house he plans to build by himself as soon as he finds the right piece of land. No, he doesn't think he'll need any help. He'll erect walls with rope-and-pulley contraptions, lug beams on dollies, hike posts with jacks and levers. He'll build all the cabinets and do all the woodwork—alone.

Good began working alone decades ago.

On a worktable he has leveled using a small laser pointer, Good tightens one of six clamps that will hold together the freshly glued framework of the pickling-vat door while it dries. To prevent warping, he takes special care to equalize the pressure of clamps paired on opposite sides of the door.

Three elliptical stained-glass windows with a garden motif—California poppies and a hummingbird flitting amid fuchsia flowers—adorn a shaded front door. Good made from red oak, a wood that will check and deteriorate if exposed to too much direct sun.

Good uses the flat part of a ball peen hammer to tap the lower center mullion of the pickling-vat door in place before making a final adjustment to the frame clamps. Although an extra pair of hands might help sometimes, Good never works with an assistant. 'I'm alone in my niche doing something special,' he says. 'I like that.'

He graduated from Cornell University, as had his father before him, did a stint in the U.S. Army and eventually graduated from Berkeley's architecture school. The job market was glutted with young architects in 1970, so Good promptly became unemployed. As an architecture student, he had learned a lot about designing buildings but practically nothing about constructing them. Still, he landed a job building a house addition for a married couple. He designed an unusual five-walled living room, and the owners loved it. So Good went down to the lumberyard and found a man who agreed to tell him how to build his distinctively designed room in return for buying his supplies at the store.

"What are you making it out of?" the man asked.

"What do you suggest?" Good asked back, only partially in jest.

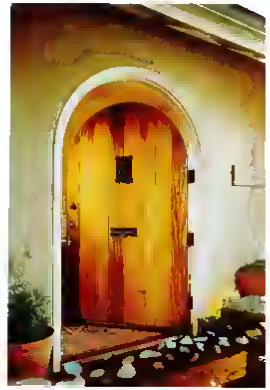
But Good was a natural. He had built elaborate tree houses as a kid. At 14, he had turned a branching tree trunk into a pedestal desk. As a teenager, he had wired a neighbor's house. He was the kind of kid who built his own radios from scratch, the kind of guy who had a complete collection of *National Geographic* magazines dating back to 1913. He had put himself through Berkeley repairing IBM typewriters, every year winning the company's local speed repair championship. But IBM wasn't the place for Good. "I always felt as if I were trapped in a giant machine. When I left home in the morning, I left my true personality behind. It never felt right." The five-walled room turned out rather well—and nearly 30 years later Good and the couple still trade Christmas cards.

He stumbled into door making. A customer couldn't find doors he liked, so Good made a pair of simple doors built of redwood cast on the diagonal. One of the man's friends saw the doors and asked Good to build him a door. Then came another friend. And another.

"Well," Good said to himself, "I guess I'm in the door business."

That was 500 doors ago. "I've built some pretty unusual doors," Good says. He once built a fir door with hidden wooden panels that could be raised to hide its windows for a couple who traveled a lot and wanted extra security while they were away. He made 10 mahogany four-panel doors with each panel rimmed in a solid brass frame that could be removed for cleaning so the brass polish wouldn't damage the wood. He made a wooden door with lower panels of steel painted to look like wood to keep a family's Doberman pinschers from scratching the door to splinters.

"A custom door to me is a door based on someone's wild idea," Good says. "It's often not just a door." People have commissioned Good doors because they want to recreate a favorite castle door from their English childhoods, because they are reclusive and want a door that blends into the wall and cannot be seen by uninvited visitors, because in their home they want to enshrine timber they have salvaged from a railroad trestle they played on as children. One man wasn't so concerned about the way his door was going to look as he was obsessed with the way it was going to feel. As a boy, the man had had a silky-feeling piece of furniture in his room. When he touched his new door, he wanted that sensation rekindled. So Good made sample finishes until the man said, "Oh, that feels just like it."



For a small stucco house, Good built a circle-head door with tongue-and-groove vertical strips of Honduran mahogany wood glued to a solid fir core. Decorative walnut buttons line the top and bottom edges of the door.

People who commission a Good door often want it to be a kind of story about themselves, and it doesn't take a psychologist to see this as a private rebellion against a cookie-cutter age. Translating the story a customer breathes into his idea of a door is a big part of Good's job. Unlike an artist who thinks of his work only as self-expression, Good aims to express the customer's vision. Sure, it's good business. But it's more than that. A craftsman is like a writer struggling to tell someone else's story, a painter committed to rendering someone else's dream. To Good, it is immoral to talk a customer into a door he doesn't really want, to convince him that mahogany is the right wood simply because Good has a pile of mahogany back at the shop. Good's job is to discern the customer's vision. The human artistry in craftsmanship, after mastering tools and materials, he says, is in the union of one person's vision and another person's implementation of that vision.

"That's why I never get attached to my doors. I've put up some doors that I thought were the ugliest doors on the face of the earth. But they were not my doors. The pleasure is having a door turn out the way I visualized it." He knows he has succeeded when a customer says, "That's exactly what I wanted."

People always want to know if anyone else will be working on their doors. They want to make sure their handmade story isn't tainted with assembly-line techniques. "Let me put it this way," Good tells them. "If I drop dead in the middle of this job, you won't get your door." People want to know stories about the building of their doors, including all the little flaws that make them distinctive, even stories about how Good nicked his finger in the cutting of a stile or caught a splinter in the sanding of a rail. "It's almost like people take comfort in knowing I suffered a bit in making their door."

Some craftsmen become cynical about affluent customers desperate to transfer the distinctiveness of objects to themselves, as if clothes made the man. Not Good. His customers' desires have allowed him to achieve not only what his customers crave but also what he himself has spent much of his life seeking: to write his own singular story in this cookie-cutter age. Good nods to the boards of Douglas fir, the bubinga panels, the rosewood moldings that are about to become a door. "Nobody else has ever made this door. Nobody has ever seen this door. I'll create something that wasn't there before, something that has never existed. And I'll do it all myself. I like that. It has become part of who I am."

He has talked way too much today, always turning from the table saw or router or sander as he does, interrupting the work. But even with talking, Good has cut his wood to size and sawed the 2-inch mortises and tenons in the strong outside frame of the door and the 1-inch mortises and tenons in the pieces that will compose the door's interior works. He has run 24-6 foot lengths of 1x1 rosewood through the router four times with four different bits to get the molding profile he wants. The rosewood leavings smell like cinnamon. He has taken a splinter in the first knuckle of his left index finger. He has dry-fitted the door, disassembled it and brushed the joints with plastic resin glue. He has put the door back together, hammered its joints tight and clamped them in place, leaving it ready to be sanded and varnished. He has done all of this through a haze of sawdust that constantly fills the air and reflects in the workshop's pale fluorescent light.

"The work's hard and dirty. The fact remains I like it." As much as ever.

Good recently visited Ritzville, Washington, and as he walked past the local wheat grower's association headquarters, he had a thought. When he got home, he bought 300 tiny neon bulbs that he plans to embed in stalks of wheat carved into a wooden door. "Don't you think a wheat grower's board should have wheat on its door?" The ideas never stop. There's the door to Rick's Cafe Americain in the movie *Casablanca*. "Wow, nice door!" Good once told his wife in the middle of watching it. "I'd like to build it someday." And he'd like to build a door made of stone... and a door that would open like the budding iris diaphragm in a camera lens... and a faux door that someday, if he lives long enough, could be projected as a hologram creating a door that is not actually there. "I love doors. Doors are what I do." ■

A 100-year-old pine door, which Good salvaged from a San Francisco hotel and would like to restore someday, inspired the four-panel design of his pickling-vat door. "That pickling-vat maker would be very pleased to see his wood reincarnated," Good says.

Quest for a Quality Door

When shopping for a new exterior door, Peter Good says, make sure it has been made with the best materials. Those include solid wood with no veneer and waterproof glue, which the door's documentation should specify. Look at the top or bottom edge of the door. A quality door will have tenons on the end of each rail that fit into mortises in the stiles. A cheaper door will be joined with dowels. Applying three coats of oil-based paint or varnish will make a door more durable and easier to clean. Remember that polyurethane is better as an interior finish than as an exterior one. To clear-coat exterior surfaces, marine spar varnish works best. Do all sizing, fitting and hardware preparation before applying the finish one side at a time with the door lying flat. Be sure to finish all edges. If the door will be exposed to rain, finish the inside at all holes and mortises cut for locks, latches, hinges or other hardware.

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BY CURTIS RIST PHOTOGRAPHS BY BILL WHITE

FIRE SPRINKLERS FOR YOUR HOME

THEY SAVE LIVES AND PROPERTY BUT COST A FORTUNE. HERE'S HOW TO GET MOST OF THE BENEFITS—FOR A FRACTION OF THE PRICE.

Rebecca and Greg Mizioch found themselves chuckling at some of the hurdles they faced when they built their house on the outskirts of Scottsdale, Arizona, in 1995. One local law required them to maintain a wildlife preserve—known derisively as a "bunny bumper"—alongside their home. Another forced them to outfit all 10 rooms with fire sprinklers, at a cost of $3,400. "We thought they were pointless," says Rebecca Mizioch, who runs a road construction company with her husband. "The odds of us ever needing them were slim to none."

Then, shortly after 6 a.m. on July 3, 1996, Greg and Rebecca's teenage daughter, Rachel, lit a few candles in her room while she was getting ready for dance camp. She placed one on a rattan bookcase, which suddenly caught fire, fueled by an explosively flammable varnish. "It went up incredibly fast," says the mother. A ball of flame rolled across the ceiling, triggering the room's lone sprinkler head even before the smoke detector sounded. Rebecca Mizioch rushed everyone out of the house and called the fire department. "By the time they got here," she says, "the fire was out."

Most of us count on smoke detectors as our first line of defense against dying in a fire, and for good reason. The number of fire deaths fell from about 6,000 a year when the alarms were just becoming popular in the mid 1970s to 4,035 in 1996. Yet as effective as detectors are,

the United States' fire-death rate is still one of the worst among developed nations. And property loss remains high. In 1996, according to the National Fire Protection Association, an estimated 417,000 residential fires caused $5 billion in damage.

Smoke detectors can't stop fires. Sprinklers can. The technical cousins of lawn sprinklers, they are suspended from ceilings or the tops of walls, connected at the back to hidden pipes filled with water. The heads contain a cap held in place by a solder connection or a glass vial filled with glycerin. During a fire, heat either melts the solder or expands the glycerin to break the vial, causing the cap to drop and water to burst out almost instantly in a fine spray. "If homes in America had them, deaths from fires would be practically nil," says Pat Coughlin of Operation Life Safety, a sprinkler-promotion group sponsored in part by the International Association of Fire Chiefs. In Napa, California, about 450 houses have been built each year since a code requiring sprinklers went into effect in 1987, yet the fire department has remained steady at 13 members. "It's because of the sprinklers," operations chief Tom Johnson says. "We just don't need extra manpower." Sprinklers work so well, in fact, that it's practically impossible to burn down a house that contains them—even on purpose. "We recently had an arsonist take five or six heaps of clothes, pour kerosene on them and try to set fires all over a house," says Robert Stilloski, fire marshal of the Town of Greenburgh, New York. "The sprinklers doused every one of them."

Despite their usefulness, residential sprinklers remain rare. Since 1980, they have been built into fewer than 100,000 single-family houses, mostly in about 600 cities that require them in new construction and major renovations. By contrast, about 18 million houses have been built without them during the same period. "I don't know why they haven't caught on with people," says Richard Trethewey, the plumbing and heating contractor for *This Old House*. "To me, they make a hell of a lot of sense."

One reason for the sluggish reception may be a nagging fear that the sprinkler heads will somehow leak or trigger throughout the house, causing more damage than a fire would. Sprinkler heads are designed to go off one at a time, which often confines water damage to the room with the fire. Although misfires may occur, sprinklers fail "no more frequently than ordinary plumbing systems," says John Hall, chief statistician of the National Fire Protection Association. A typical home-owners' insurance policy covers any water damage. And the flow, which ranges from 5 to 15 gallons per minute, is generally preferable to the alternative. "When the guys with the fire hoses come," says assistant chief Jim Ford of Scottsdale, "they're going to be pumping out 200 gallons a minute."

A more valid obstacle to sprinklers is their expense. In new construction, where walls are open, installers typically charge about $1.50 a square foot, the cost of a carpet upgrade. But in an existing house, they may charge $5 or more a square foot—$10,000 for 2,000 square feet. That's so far beyond what most families can afford that home owners in communities with sprinkler requirements usually do not add the systems unless forced; instead, owners take out extra insurance coverage in case they are required to install sprinklers after a big fire.

The reason millions of families can't afford sprinklers is that the industry decided to scale them as if cost were not an issue. Instead of calling for systems that could function as well as possible with the water usually available—the 3 to 5 gallons a minute, say, needed to operate a shower head—the National Fire Protection Association decided that sprinklers should be powerful enough to guarantee 10 minutes of escape time. The association, whose 70,000 members include the whole spectrum of those in the business of fighting fire, wrote a code that most communities with sprinkler laws have copied verbatim. Known as NFPA 13D, the code requires sprinklers in every room (even bathrooms) and maximum water flow through the two most remote sprinkler heads for 10 minutes. As a result, installers often have to boost water pressure, either by putting in a larger meter and water main or by adding a pressurized water tank. (Recently, $3,000 tanks became available; until a few years ago, installing sprinklers in houses with wells often meant buying $10,000 frost-protected water towers.)

Milosh Puchovsky, a senior fire engineer for the association, says because sprinklers are a "life safety system," any compromise to reduce the cost would be unacceptable. But, he acknowledges, "It is an all or nothing approach."

Richard Patton, a fire protection engineer from Citrus Heights, California, says what's needed is a strong dose of reality. "Fundamentally, the code makes it virtually impossible to install sprinklers in any existing home. And it pretty much doubles the cost of what it needs to be for sprinklering new homes," he says. "If you're saying that you're going to come up with a decent way of putting out fires and in the process of doing that come up with a code excluding this as a possibility for 90 percent of the homes, then your thinking is crazy."

As the head of the Crusade Against Fire Deaths, Patton is leading a campaign for code changes to allow sprinkler systems that conform to the available water supply, rather than vice versa. In the meantime, he encourages owners to install low-flow partial systems where a full system is prohibitive. "There'd be a reduction in benefits—maybe instead of saving lives 98 percent of the time, they'd save them only 96 percent of the time," he says. "The point is: Some water is better than no water."

This view appears to be catching on. Two sprinkler trade associations and the National Fire Protection Association have been talking, at least in private, about the possible merits of partial sprinkler systems. A closed-door seminar at the National Institute for Standards and Technology two years ago resulted in a decision to back tests of a sprinkler head only in the kitchen, where 29 percent of all fires begin. Acting on its own a year later, the city of Petaluma, California, eased its mandatory sprinkler law to allow most new houses to have

Greg and Rebecca Mizioch and their daughters, Rachel, 14, and Laurie, 10, were all awake the morning a candle in Rachel's room ignited a bookcase, bottom right. But even Rachel didn't realize what was happening until a sprinkler near the ceiling fan shut on. Firefighters said the flames were so hot that she might have died; they count hers among the 52 lives saved since 1986 by the mandatory sprinkler law in Scottsdale, Arizona.

M ZOOH FAMILY BY IAN VERMILLION; HOUSE F RE PHOTOGRAPHS COURTESY OF RURAL METRO FIRE DEPT., SCOTTSDALE, AZ

HOUSE ON F RE: POLAROID LINDA IMAGE BY DAVID LEVINTHAL

THE KITCHEN

What's cooking? More fires start here than anywhere else—a result of food left frying or boiling unattended. Kitchen sprinklers should be at least 5 feet out from the stove or oven so ordinary heat doesn't trigger them.

THE DEN AND THE LIVING ROOM

Although fewer fires start in these rooms, flames here tend to be far deadlier. Smoldering cigarette butts dropped onto a sofa can ignite in the middle of the night—as can flammable materials such as drapes too close to fireplaces or portable heaters. (The pros recommend keeping them at least 3 feet away.) Sprinkler heads installed here should be 5 feet from heating equipment.

THE BEDROOMS

In a house fire, the very young and the elderly are most likely to die. Installing sprinklers in their bedrooms may provide extra protection. Don't smoke in bed and, as the Miziochs learned, keep in mind that allowing candles in a child's—even a teenager's—room is a very bad idea.

sprinklers only in "hot spots"—specifically the kitchen and near (but not over) woodstoves, dryers, water heaters and furnaces. Because these areas are mostly on the first floor or in the basement, the water pressure requirements are less onerous than for a sprinkler head installed in the most remote bedroom upstairs. "The hope was to target the areas where fires occur and at the same time make this more feasible," fire inspector Vince Sprocte says. "They're putting out fires—absolutely."

Full sprinkler setups usually run on separate piping systems connected to household plumbing just past the water meter. These systems can be installed "by anyone who can glue two pieces of pipe together for a lawn system," says Ken Johns, a sprinkler installer in Napa, but calculating hydraulics and sizing pipes correctly usually requires professional help.

By contrast, partial systems can be installed one room at a time simply by cutting into the nearest available cold water pipe and installing a loop that runs to the sprinkler head and back to the supply pipe. The loop is crucial. Dead-ending the pipe at a sprinkler head could eventually contaminate the water supply with organisms that multiply in stagnant water. Johns says that, in his experience, pressure of 60 pounds per square inch or above—measured by screwing a $15 pressure gauge onto an outside hose bib—allows a sprinkler head to function well enough to contain a fire. Below 40 psi, water will just dribble from the sprinkler. "If you have a house where the water flow is so low that the shower turns scalding when someone flushes the toilet, you definitely don't have what you need," Johns says.

Petaluma doesn't specify pressure but does require that sprinkler heads be connected to ¾-inch piping rather than the more typical ½-inch piping. As a result, Johns says, "You may have to change the pipe down to the water supply, but it's not a big deal."

To Tom Silva, the contractor for *This Old House*, adding sprinkler heads at trouble spots makes sense. In his own house, he installed the heads in stairwells, above the furnace in the basement and near the kitchen stove. "I look at it this way. Even if it is not total coverage, any help is beneficial." Tom came to this conclusion some years ago after a fire ripped through his parents' house. "The amount of damage that happened in a little bit of time was amazing," he says—damage from both the fire itself and the deluge from the firefighters' hoses. When rebuilding, he decided to add a few sprinkler heads in loops connected to the main plumbing system, and he has installed a similar network in the house that the television staff is renovating in Milton, Massachusetts. It's not a full-blown system, but "I don't think you'd spend more than $300. It's worth the extra protection."

Rebecca Mizioch would agree. Despite the fire and the dousing from the sprinkler, her house needed only a replacement patch of carpet, a little repainting and a few new pieces of furniture. Even her hassles with the insurance company were negligible. Since the fire, her daughter Rachel has developed a phobia about candles, "even on her birthday cake," Rebecca says. Still, she believes her family got off cheaply. "We didn't have to have the experience of standing there helplessly while we lost everything we owned. Regardless of where I live from now on, I will always have sprinklers." ■

Some residential fire sprinklers (A) are concealed behind caps that pop off during fire; others (B) hang exposed. The big risk with concealed sprinklers is that someone will paint over them, filling the tiny air space between cap and ceiling that devices need to trigger promptly. Rare sprinklers have their own diameter—they're no handy for coat hangers and mobiles. Some sprinklers (1, 2 and 4) can be installed in walls, 4-6 in. below the ceiling. The other sprinklers are ceiling pendants in a variety of finishes.

FOR SOURCES, SEE DIRECTORY—PAGE 117

Installing even a code-approved sprinkler system is straightforward, assuming enough water is available. First, cut into the incoming water supply just past the meter and main shut-off valve. A tee (1) sends household water one way, sprinkler water the other. A pressure gauge (2) verifies that enough water is available. A shut-off valve (3) allows work to continue on the sprinkler system while faucets remain on. A rubber-faced check valve (4) allows water to flow only one way, eliminating the risk of mixing stagnant sprinkler water with tap water. Here, the valve is cut away to show how it works. A flow detector (5), also cut away, triggers an alarm if water flow is through. A second pressure gauge (6) provides good insurance against valves that are closed or installed backward. An auxiliary shut-off (7) allows sprinkler system drainage for repairs. Typically, copper pipe with threaded or soldered connections links all these valves. From this point on, however, the newest systems use special plastic pipe with glued connectors. The final pieces are a head adapter (8), designed for switching from plastic to metal, and a sprinkler head (9), which just screws on.

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THE POSTER

OPEN HERE

How to Identify Trees in Winter

In winter, deciduous trees are exhibiting as never before their physiques. It's an opportunity not to be missed. For without the summertime distraction of millions of tiny solar collectors, many trees are recognizable solely by their silhouettes. Maples are round, weeping willows look like umbrellas; persimmons have branches that zigzag. Individual trees may vary, depending on whether they were pruned or crowded or left free to grow. But when a tree bulges with muscles yet has smooth, light skin, it's probably a beech. When it's shaped like a Christmas tree but bare, it's likely a birch. Details such as catkins or lingering seed pods can clear up any confusion. For these and other clues, study the following pen and ink drawings of trees at the Morton Arboretum near Chicago. Soon, wintry walks may become tours of familiar forestry.

BY JEANNE RUBER PHOTOGRAPH BY WILLIAM ABRANOWICZ

Even people who think they have no artistic skill can gain a lot by drawing trees in winter. Sketching hones observation skills.

Anthony Tyznik, a landscape architect who drew the stunning tree portraits on this poster during his 40 years at the Morton Arboretum in Lisle, Illinois, remembers staring out the window during boring business meetings, pondering why some trees quivered in the breeze—with each leaf seeming to move independently—while other trees bent whole branches at a time. Anyone who sketches the details of maples and poplars will discover the reason. They have long petioles (stems that link leaves to twigs) so their leaves twirl and flutter, catching the glint of sunlight. On trees with short petioles, leaves move like wind socks—all together in the direction of the wind. "When you draw, you notice things you otherwise overlook," he says.

Tyznik never took a class in botanical drawing. His art was self-taught, kindled by an experience in second grade when the teacher of his one-room school held up a drawing he'd done and told the class, "If this little boy can draw a tree this detailed, you can do so too." Now, at age 72, he muses about a tree-drawing course he always wanted to teach but never got around to organizing. "It wouldn't have been an art class," he says, "but a class on observation."

Clare Walker Leslie, a naturalist, artist, teacher and author of *Nature All Year Long*, says drawing just what is visible of the tree is the key concept. "Start at the bottom," she suggests. "Draw both sides of the trunk very carefully, seeing how far up the trunk goes before the first branch. Carefully draw out the first branch on both sides, remembering—this is the big thing—to look at how they are shaped. Don't make the branches look like carrots." Limbs usually grow progressively narrower as they extend and then split into smaller branches. "It's the way roads divide, getting smaller and smaller." Finally the branches become so tiny they end up as twigs. Don't worry about drawing every branch. "Get the general shape," Leslie says. "Then stand back and make sure you've captured what the tree is all about. A fun word I use with older students is the German *Gestalt*—the essence, the character."

She has another bit of advice, which comes from teaching schoolchildren during many harsh Massachusetts winters. "Start by making drawings just 2 by 3 inches. If you keep them little, your fingers don't freeze and you can get the drawing done."

PHOTOGRAPH BY KENNETH WYMAN

LANDSCAPE ARCHITECT ANTHONY TYZNIK POSES BEFORE A PAPER BIRCH AT HIS SON'S NURSERY, WHERE HE SPECIALIZES IN DESIGNS FEATURING TREES THAT FLOURISH IN NORTHERN ILLINOIS

IDENTIFYING

STAGHORN SUMAC
Drawn at 10 years old. Loose and sprawling. Velvety hairs, similar to those on a young stag's antlers, cover stems. Red fruit clusters.

AMERICAN LINDEN
Drawn at 50 years old. Also known as basswood. Oval-shaped. Branches shoot up, sometimes to 100 feet; lower branches droop. Gray-brown nutlets often persist into winter.

RIVER BIRCH
Drawn at 40 years old. Pyramidal when young, more oval with age. Salmon pink under curling bark. Catkins hang in clusters of three.

REDBUD
Drawn at 40 years old. Often low and wide with low branching. Thin beanlike pods, each with 10 to 12 seeds, last until early winter.

GINKGO
Drawn at 60 years old. Like a conifer when young, somewhat conical when mature. On female trees, flower buds come in pairs borne under small knobs.

DOWNY HAWTHORN
Drawn at 60 years old. Broad, round and dense with branches touching the ground. Edible red fruit.

FLOWERING DOGWOOD
Drawn at 40 years old. Wide with prominent horizontal branches. At twig ends, pointed flower buds face up.

WHITE OAK
Drawn at 160 years old. Wide and round with branches that angle out. Leaves remain into winter. Acorn cups have fuzzy, blunt scales.

BLUE BEECH
Drawn at 30 years old. Also known as ironwood and American hornbeam. Twigs are similar to birch but lack catkins in winter.

TREES IN WINTER

OHIO BUCKEYE

Drawn at 50 years old. Round with branches that curl up at tip. Prickly husks break open, revealing inedible mahogany seeds with stem scars resembling a buck's eye.

CHINESE CHESTNUT

Drawn at 50 years old. Resembles an inverted cup, with low horizontal branches. Leaves turn brown but often remain into late winter. Nuts in prickly burrs are edible.

TULIP TREE

Drawn at 44 years old. Often oval, but varies a lot. Winged seeds fall gradually from conelike fruit until only the candlelike eidiks remain.

SOUR GUM

Drawn at 60 years old. Flat-topped pyramid with mostly horizontal branches. Bark looks like alligator hide. Twigs, if broken open, reveal woody partitions in the pith.

HONEY LOCUST

Drawn at 35 years old. Loose and pendulous. Wild trees have 18-inch beanlike seed pods and huge forked thorns on trunk; most nursery specimens have neither.

YELLOWWOOD

Drawn at 60 years old. Round, becoming broader with age. Seed pods are similar to locust's but smaller. Has no thorns.

SAUCER MAGNOLIA

Drawn at 40 years old. Rounded with low, stout branches. Silky yellow-gray hairs cover large buds at the tips of branches in winter.

SYCAMORE

Drawn at 40 years old. Oblong to oval. Can be very tall. Mottled bark. One-inch-diameter seed clusters hang on long stems.

BLACK ALDER

Drawn at 30 years old. Often flat-topped oval with multiple trunks, but varies a lot. Female catkins develop to resemble tiny pinecones.

PRAIRIE CRAB APPLE

Drawn at 33 years old. Tangled branches have thick spurs 1 inch or more in length. Apples, 1 inch or more in diameter, persist.

SHAGBARK HICKORY

Drawn at 75 years old. Oblong shape. Bark splits off in long, arching sections, making the tree appear shaggy. Four-section husks split, releasing edible nuts.

EUROPEAN LARCH

Drawn at 38 years old. Deciduous conifer, shaped like a Christmas tree. Twigs on drooping branchlets have black accents, where shoots will grow.

SHADBUSH

Drawn at 50 years old. Also known as juneberry. Lacy and open. Buds are slender, slightly twisted, often pink with dark tips.

SUGAR MAPLE

Drawn at 128 years old. Oval or round, widening with age. Often grows more than 100 feet tall. Buds are in pairs and distinctly pointed.

HOP HORNBEAM

Drawn at 150 years old. Named for its seed cases, which hang in clusters resembling those of the hops vine. Also called ironwood.

BURR OAK

Drawn at 145 years old. Also known as mossycup. Spreading, often with gnarled branches. Acorn cups have a hairy fringe.

SILVERBELL

Drawn at 42 years old. Low-branching. Brown fruit lasts into winter, is 1½ inches long and has four wings; stones have eight ribs.

PERSIMMON

Drawn at 90 years old. Branching up when young but drooping later. Juicy orange fruit, sweet when ripe, lasts into early winter.

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ILLUSTRATIONS BY ANTHONY TYZHIK, THE MORTON ARBORETUM

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ASK NORM

SHARP BITS

I assume you use carbide bits for your router. Any advice about how to maintain and sharpen them?

THOM STRUNK, *Eugene, Ore*

Sharpening carbide bits is not something an amateur should try. There are little diamond stones that you can use to touch them up, basically you just want to hit the back (flat) side of the blade. But it's tough to do a proper job. I send mine out to a pro and let him worry about them.

A HOUSE WORTH SAVING

I am 13, and I started watching *This Old House* because my late godfather owned a turn-of-the-century house in San Francisco. It was originally a caretaker's house for public baths (some of the original brick tubs are still in the back yard), and it survived both the 1906 and 1989 earthquakes. Now it is owned by my uncle, who plans to retire soon and sell the house. I'm afraid that means it will be bought by developers who'll tear it down and build apartments. If you know of any way I can save this house, please let me know.

JENNIFER GARDINER, *Fremont, Calif*

It can be very difficult to save anything that someone else owns, but I think in this case you may have a fighting chance. From what you tell me, the house may have historic value. I suggest you check with historical and preservation societies in the San Francisco area to see whether the house is eligible for landmark status.

BUTCHERED BLOCK

My husband and I installed a butcher-block counter, and it turned black from water around the sink. We scraped the butcher block clean and lacquered it, and now everything sticks to the lacquer—even the rubber feet of the food processor. What do you suggest we do?

SUSAN M. WILDER, *New Smyrna Beach, Fla*

Butcher block is easy to like but hard to live with because it requires a lot of maintenance. You can remove the lacquer and apply light mineral oil periodically, remembering never to let water stand on the surface. Or you could build up a tough epoxy coating followed by spar varnish, a finish that people in the boating industry use to protect wood from moisture and ultraviolet light. Of course, then you'll have a boat look, gleaming and glossy, not the raw-wood butcher block that most people prefer.

CABINET CUTOUT

I want to run new kitchen cabinets along a wall with a window, and I don't want to break the counter space. Can you supply details for a solution?

LINDA HALDANE, *Las Vegas, Nev*

Extending the counter space is not as hard as it sounds. The next time you talk to your installer, just tell him you want a cutout to accommodate the window. I have to say I don't really like the idea very much, though, because it will create a trap that accumulates dirt and moisture. And a cabinet placed in front of a window won't look good either.

ATTIC SWELTER

Our second-floor ceiling (the floor of the attic) is insulated, but the roof is not. Because we store items in the attic that get very hot in the summertime, we've thought about putting insulation between the rafters—but we wonder whether it would be unnecessary work and expense.

JOHN CLAFLIN, *Southbury, Conn*

Insulation between the rafters would keep the attic a little cooler, but a better option is to install a thermostatically controlled fan—not a whole-house fan, but one for the attic only—like the one I put in my previous house. First make sure that your gable vents are capable of letting in as much air as the fan will blow out; if they're too small, the fan will suck air out of your house. Even if you end up having to install bigger vents, a fan in the attic will always turn out to be a cheaper solution than insulation.

PAINT PREP CAVEATS

I have a classic 1950s GI house of wood with brick detail in front, and it is in desperate need of a paint job. The paint is coming off in big flakes that reveal bare wood. One painter suggests using a pressure washer to remove the flak-

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As the plumbing standard for over 70 years, only copper has the track record to offer a warranty like this. It covers failure due to manufacturing defects in material or workmanship for a full 50 years. Heck, you might even be a *great* grandparent by then!

So if you're looking for a reliable, trouble-free plumbing system, insist on copper. For full details on this transferable Manufacturer's Limited Warranty and a copy of our *Why You Should Choose Copper Plumbing* pamphlet, contact the Copper Development Association at 800-741-6823. And visit us at *http://piping.copper.org*. Warranty details are also available through your builder or plumber.

COPPER

The plumbing in 9 out of 10 plumbers' homes.

KELLER & KELLER

ASK NORM

ing paint, then scraping a little to even out the finish. A second painter wants to wash the house with a cleaner, let it dry, then scrape and sand the old paint, using putty to feather the edges of the flaked areas. This latter approach is much cheaper, but is it better?

MELISSA CHESSHER ASPELL, *Birmingham, Ala.*

Yeah, sounds like my brother-in-law. Our family cottage needs paint, and he said, "Oh, we'll just power-wash it off and then paint it." I said, "We may power-wash it to get rid of any mildew or mold and to clean the paint that's still well adhered to the house. But we will still scrape it, and we might even sand the paint that's remaining, just lightly, to provide some tooth for the next coat." And that's what we'll do. Using a power washer to remove paint bothers me for several reasons. You're not going to get the loose paint off unless you angle the spray just right. And if the pressure is too high, you'll almost sand-blast the wood, compressing the fibers and making it harder for the new paint to adhere. Worse, there's the risk of high-pressure water getting behind the siding.

GENUINE NORM

I have one very important question. How does a girl go about getting a genuine Norm-made piece of furniture?

SANDRA K. ABERCROMBIE, *Belleville, Mich.*

Actually, no pieces made on The New Yankee Workshop *have ever been sold, unless you count the ones we've donated to the WGBH auction. A few have been given to our national underwriters, but all the rest are with my family or our executive producer, Russ Morash, and his family. The point of the show is that you can build these projects yourself.*

SHODDY SIDING

I own a two-year-old wood-frame house with fiberboard siding, and already there are signs of damage—warping, swelling, etc. Many people in my subdivision are replacing their damaged siding with vinyl, and I've had several companies give me estimates and suggestions. One told me not to remove the old siding "because it is attached to the beams, and you could twist them and damage the drywall on the inside." Do you know if this is true? And what replacement should we choose? We've thought about masonry siding and stucco finished with a brick look.

LORI-ANN PIETRUSKI, *Jacksonville, Fla.*

I can't see the point of installing new siding over old deteriorating siding, so take it off. As for twisting the beams or studs, you'd have to be extremely violent to do more than pop a few nails, so don't worry about it. But before you install new siding, add some kind of sheathing, such as exterior-grade plywood. As for your choice of replacement, keep in mind that vinyl and aluminum tend to expand and contract a lot in hot regions. There is a cement siding that works surprisingly well in your climate, and it resembles clapboard. One thing I remember from when my grandfather moved to Florida was that the masons there were excellent, so I'd also suggest stucco. But I wouldn't mimic a stone or brick look, I'd prefer it plain, showing just the texture of the stucco itself.

TAX DOLLARS AT WORK

I'd like to open up a couple of tiny rooms in my house, but I'm not sure which walls are load bearing. Is there an easy way to determine this? What kind of specialist should I hire, and how do I protect myself if the advice is wrong?

BARBARA ANSLEY, *Edmunds, Wash.*

Get what you pay your taxes for. One of the most effective and least expensive ways to find out whether your walls are load bearing is to call up town hall and ask that your local building inspector come by and check it out.

CEMENT WASHOUT

We used a bagged cement mix to patch our sidewalk. Two days later, after an unusually heavy rainstorm, we noticed that the patches were crumbling. Should we blame the rain for the bad patches and try the same mix again, or is there a different product we should try?

GERALD AND ESTELLE REISNER, *Meadville, Penn.*

I assume you had small depressions or shallow potholes in the sidewalk, in which case you were trying to do something that's very difficult. Did you remember to wet the area before applying the cement? Was your mix too wet and applied in the sun on a hot day? Thin patches don't generally work well, and ordinary bagged cement mix is too coarse for this job. Visit a mason's supply for a product designed specifically for this condition.

Send questions to Ask Norm, *This Old House* magazine, 1185 Avenue of the Americas, 27th floor, New York, NY 10036. Include a complete address and daytime phone number. Letters may be edited for clarity and brevity.

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"heirloom" children's furniture and toys
all on your own?

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KIDS' STUFF

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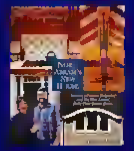

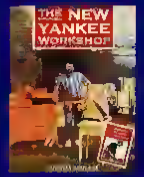

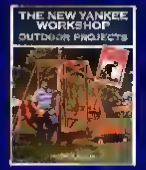

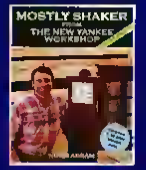

DIRECTORY

house and garden

This Old House

Where and when to watch on PBS and commercial stations

● Indicates *This Old House* • Closeup • vintage episodes rebroadcast as commercial stations

ALABAMA

Birmingham
WBIQ TV
Thu 8:30 pm, Sat. 8 pm
● WCFT/WJSU-TV
Sat 6:30 am

Demopolis
WIIQ TV
Thu 8:30 pm Sat 8 pm

Dozier
WIIQ TV
Thu 8:30 pm Sat 8 pm

Florence
WIIQ TV
Thu 8:30 pm Sat 8 pm

Huntsville
WHIQ-TV
Thu 8:30 pm, Sat 8 pm
● WZDX TV
Sun 7 am

Louisville
WCIQ TV
Thu 8:30 pm, Sat 10:30 pm

Mobile
WALA TV*
WEIQ-TV
Thu 8:30 pm Sat 8 pm

Montgomery
WAIQ-TV
Thu 8:30 pm, Sat. 8 pm

Mount Cheaha
WCIQ-TV
Thu 8:30 pm Sun 8 pm

ALASKA

Anchorage
KAKM TV
Mon 6 pm Sat 9:30 am
● KIMO-TV
Sat 4:30 pm

Bethel
KYUK TV
Fri 8 pm Sat. 8 am

Fairbanks
KUAC-TV
Fri 8 pm Sat. 8 am
● KATN TV
Sat 4:30 pm

Juneau
KTOO TV
Fri 8 pm Sat. 8 am
● KJUD TV
Sat 4:30

ARIZONA

Phoenix
KAET TV
Thu 1 pm and 7:30 pm
Sat. noon and 3 pm
● KNXV TV
Sun 10 am

Tucson
KUAS-TV
Sat. 11 am and 6:30 pm
KUAT TV
Sat 11 am and 6:30 pm
● KTTU TV
Sat 8 am

ARKANSAS

Arkadelphia
KETG TV
Sat. 12:30 pm

Fayetteville
KAFT TV
Sat. 12:30 pm

Jonesboro
KTEJ TV
Sat. 12:30 pm

Little Rock
KETS-TV
Sat 12:30 pm
● KTHV TV
Sat 11 am

Mountain View
KEMV TV
Sat 12:30 pm

CALIFORNIA

Chico
● KKCR-TV
Sun 3 pm

Eureka
KEET TV
Wed 7:30 pm
Sat 10:30 am
● KAEF-TV
Sun 3 pm

Fresno
KVPT TV
Sat 9:30 am, Sun 7 pm,
Tues. 9 pm

Huntington Beach
KOCE TV
Sat 4:30 pm Tues 8 pm

Los Angeles
KCET TV
Sat 3:30 pm
● KABC-TV
Sun 6:30 am

Redding
KIXE-TV
Sat 10:30 am

Rohnert Park
KRCB-TV
Sun. 7:30 pm

Sacramento
KVIE TV
Thu 8 pm Sat 8:30 am
● KPWB-TV
Sat 6 am

San Bernardino
KVCR TV
Thu. 8 pm

San Diego
KPBS-TV
Sat 11 am
● KGTV TV
Sun noon

San Francisco
KQED-TV
Sun 3 pm
● KPIX TV
Sun. 10:30 am

San Jose
KTEH TV
Wed 9 pm Sat 3 pm
Sun. 3:30 pm

Santa Maria
KCSM TV
Wed 6:30 pm Sun 10 am

Santa Barbara
● KSBY TV*

COLORADO

Boulder
KBDI TV
Wed 3:30 am and
5:30 pm Sat 3:30 pm
Sun 4 pm

Colorado Springs
● KRDO TV
Sun 11:30 am

Denver
KRMA TV
Sat 2 pm Sun 3:30 pm
● KCNC TV
Sat 4 pm

Grand Junction
● KJCT TV
Sun. 11:30 am

Pueblo
KTSC-TV
Thu 8:30 pm Sat 2:30 pm

CONNECTICUT

Fairfield
WEDW TV
Tue noon Thu 11 pm
Sat 8 pm, Sun 10:30 am

Hartford
WEDH TV
Tue. noon Thu 11 pm
Sat 7 pm, Sun 10:30 am
● WFSB-TV
Sat. 11:30 am

New Haven
WEDY TV
Tue noon Thu 11 pm
Sat. 7 pm, Sun 10:30 am

Norwich
WEDN TV
Tue noon, Thu 11 pm
Sat 7 pm, Sun 10:30 am

DISTRICT OF COLUMBIA

WETA TV
Sat 8 pm
● WRC TV
Sun 5 am

FLORIDA

Bonita Springs
WGCU TV
Sat. 1:30 pm, Sun. 3 pm

Daytona Beach
WCEU-TV
Tue. 8 pm Sat. 6 pm

Fort Myers
● WTVK TV
Sat 5:30 am

Gainesville
WUFT TV
Sat 1:30 pm
● WCJB-TV
Sun 1:30 pm

Jacksonville
WJCT TV
Sat noon and 3:30 pm

Miami
WLRN TV
Sun 10 am
WPBT TV
Sat 3 pm
● WPLG-TV
Sun 8 am

Orlando
WMFE-TV
Sat 9 am
Sun. 8 am, Thu. 8 pm

Pensacola
WSRE-TV
Sat. 12:30 pm and 6:30 pm

Sarasota
● WWSB-TV
Sun 11:30 am

Tallahassee
WFSU TV
Sat 1:30 pm and 6:30 pm

Tampa
WEDU TV
Sat. 11:30 am
WUSF TV
Wed 9 pm
Sun 5:30 pm
● WTVT TV
Sat. 9:30 am

West Palm Beach
● WPTV TV
Sun 6 am

GEORGIA

Albany
● WCVP TV
Sun 2:30 pm

Atlanta
WGTV-TV
Sat. 9:30 am 3:30 pm
Sun 8 pm
WPBA TV
Mon 8 pm...Wed 2 pm
Sat 6 pm
● WXIA TV
Sat. 3:30 am

Chatsworth
WCLP-TV
Sat 9:30 am 3:30 pm
Sun 8 pm

Cochran
WDCO TV
9:30 am
Sat. 3:30 pm, Sun 8 pm

Columbus
WJSP-TV
Sat 9:30 am and 3:30 pm
Sun 8 pm

Dawson
WACS-TV
Sat 9:30 am and 3:30 pm,
Sun 8 pm

Macon
● WMAZ TV
Sat. 11 am

Pelham
WABW TV
Sat 9:30 am, 3:30 pm
Sun. 8 pm

Savannah
WVAN TV
Sat 9:30 am and 3:30 pm
Sun 8 pm
● WTOC TV
Sun 3 pm

Waycross
WXGA TV
Sat. 9:30 am and 3:30 pm
Sun 8 pm

Wrens
WCES-TV
Sat 9:30 am and 3:30 pm
Sun 8 pm

HAWAII

Honolulu
KHET TV
Sat 1:30 pm
● KHNL-TV
Sun. 3 pm

Wailuku
KMEB-TV
Sat. 1:30 pm

IDAHO

Boise
KAID-TV
Sun. 4:30 pm
● KIVI TV
Sun. 6:30 am

Coeur d'Alene
KCDT TV
Sun. 3:30 pm

Moscow
KUID-TV
Sun. 3:30 pm

Pocatello
KISU TV
Sun. 4:30 pm

Twin Falls
KIPT TV
Sun. 4:30 pm

ILLINOIS

Carbondale
WSIU TV
Thu 7 pm, Fri. 12:30 pm
Sat. 12:30 pm

Champaign
● WAND TV
Sat. 5:30 am

Charleston
WEIU TV
Sat. 6:30 pm

Chicago
WTTW-TV
Tue 7:30 pm, Sat 3 pm
● WFLD TV*

Jacksonville
WSEC TV
Thu 10 pm, Sun 1:30 pm

Macomb
WMEC-TV
Thu 10 pm, Sun. 1:30 pm

Moline
WQPT TV
Tue 7 pm Sat 3:30 pm

Olney
WUSI TV
Thu 7 pm Fri 12:30 pm
Sat. 12:30 pm

Peoria
WTVP-TV
Thu 10 pm Sat 12:30 pm
● WHOI TV*

Quincy
WQEC-TV
Thu 10 pm Sun 1:30 pm

Rockford
● WTVO-TV
Sat 6:30 pm

Springfield
● WICS-TV
Sat 7:30 am

Urbana
WILL TV
Thu. 7:30 pm Sun. 3:30 pm

INDIANA

Bloomington
WTIU TV
Mon 3 pm Thu 11 pm,
Sat. 12:30 pm

Evansville
WNIN TV
Sat 12:30 pm and 6 pm
Sun 4:30 pm
● WFIE-TV
Sun 6 am

Fort Wayne
WFWA-TV
Sat. 10 am

Indianapolis
WFYI TV
Sat. 10 am and 5 pm
Sun 7 pm
● WTHR-TV*

Merrillville
WYIN TV
Thu. 8:30 pm, Sun. 3:30 pm

Muncie
WIPB-TV
Thu 4:30 pm

South Bend
WNIT TV
Wed 7 pm, Sat 2 pm

Terre Haute
● WTWO TV
Sun 6 am

Vincennes
WVUT TV
Sat 12:30 pm

IOWA

Cedar Rapids
● KWWL TV
Sat 2:30 am

Council Bluffs
KDIN TV
Fri 6:30 pm, Sat. 1:30 pm

Davenport
KQCT
Tue 7 pm, Sat. 5:30 pm
● WQAD-TV
Sun 11 am

Des Moines
KDIN-TV
Fri 6:30 pm, Sat 1:30 pm

Fort Dodge
KTIN TV
Fri. 6:30 pm, Sat. 1:30 pm

Iowa City
KIIN TV
Fri 6:30 pm, Sat 1:30 pm

Mason City
KYIN TV
Fri 6:30 pm, Sat 1:30 pm

Red Oak
KHIN TV
Fri 6:30 pm, Sat 1:30 pm

Sioux City
KSIN TV
Fri. 6:30 pm, Sat 1:30 pm

Waterloo
KKIN TV
Fri 6:30 pm Sat 1:30 pm

KANSAS

Bunker Hill
KOOD-TV
Thu 7 pm, Sat 12 pm

Lakin
KSWK TV
Thu 7 pm, Sat 12 pm

Topeka
KTWU TV
Sat 9:30 am

Wichita
KPTS-TV
Sat 11:30 am Sun. 11 am
● KSNW-TV
Sun 6:30 am

KENTUCKY

Ashland
WKAS-TV
Mon 6:30 pm, Sun 3 pm

Bowling Green
WKGB TV
Mon. 3:30 pm, Sun 4 pm
WKYU TV
Tue 1 pm and 6:30 pm
● WBKO TV
Sun 6:30 am

*check your local listings

Covington
WGVU TV
Mon 6:30 pm Sun 5 pm

Elizabethtown
WKZT TV
Mon. 6:30 pm Sun. 5 pm

Hazard
WKHA TV
Mon 6:30 pm, Sun 5 pm

Lexington
WKLE TV
Mon 6:30 pm Sun 5 pm
WKMJ TV
Mon 6:30 pm, Sun 3 pm
WKPC TV
Sat 1:30 pm, Sun 3 pm
● WTVQ-TV*

Louisville
WKMJ TV
Mon 6:30 pm, Sun. 3 pm
WKPC TV
Sat 1:30 pm, Sun. 3 pm
● WAVE TV*

Madisonville
WKMA TV
Mon. 3:30 pm, Sun 4 pm

Morehead
WKMR TV
Mon 6:30 pm, Sun 3 pm

Murray
WKMU TV
Mon 3:30 pm, Sun 4 pm

Owensboro
WKOH TV
Mon 3:30 pm, Sun 4 pm

Owenton
WKON TV
Mon. 6:30 pm, Sun. 3 pm

Paducah
WKPD TV
Mon 3:30 pm, Sun 4 pm
● KBSI TV
Sun 10:30 pm

Pikeville
WKPI TV
Mon. 6:30 pm, Sun 5 pm

Somerset
WKSO TV
Mon 6:30 pm, Sun 3 pm

LOUISIANA

Alexandria
kLLA TV
Sat 4 pm Sun. 10 am

Baton Rouge
WLPB-TV
Sat 4 pm Sun. 10 am
● KWBJ TV
Sun. noon

Lafayette
KLPB-TV
Sat 4 pm Sun. 10 am

Lake Charles
KLTL-TV
Sat 4 pm Sun. 10 am

Monroe
KLTM TV
Sat. 4 pm Sun 10 am

New Orleans
WYES-TV
Sat 8:30 am
● WVUE
Sun 6 pm

Shreveport
KLTS-TV
Sat 4 pm, Sun. 10 am
● KTBS*

MAINE

Bangor
WMEB-TV
Sat. 1:30 pm

Calais
WMED-TV
Sat 1:30 pm

Lewiston
WCBB-TV
Sat 1:30 pm

Portland
WMEA TV
Sat 1:30 pm
● WFXT TV
Sun. 11 am

Presque Isle
WMEM TV
Sat. 1:30 pm

MARYLAND

Annapolis
WMPT TV
Sat. 4:30 pm, Sun 6:30 pm

Baltimore
WMPB-TV
Sat. 4:30 pm, Sun. 6:30 pm
● WMAR TV*

Frederick
WFPT TV
Sat 4:30 pm Sun 6:30 pm

Hagerstown
WWPB TV
Sat 4:30 pm Sun. 6:30 pm

Oakland
WGPT TV
Sat 4:30 pm Sun. 6:30 pm

Salisbury
WCPB-TV
Sat 4:30 pm, Sun 6:30 pm

MASSACHUSETTS

Boston
WGBH TV
Thu 8 pm Sat 6:30 pm
WGBX TV
Sun. 9 am
● WFXT TV
Sun. 11 am

Springfield
WGBY TV
Thu 8 pm Sat 3:30 pm

MICHIGAN

Alpena
WCML-TV
Sat 2:30 pm

Bad Axe
WUCX TV
Tue 12:30 pm, Sun 3 pm

Cadillac
WCMV
Sat 2:30 pm
● WWTV/WWUP
Sun 10:30 am

Detroit
WTVS-TV
Thu. 8:30 pm, Sat 10 am
● WDIV TV*

East Lansing
WKAR TV
Thu 9 pm, Sat. 1:30 pm
Sun 3 pm

Flint
WFUM-TV
Thu. 9 pm, Sat. 1:30 pm
● WEYI TV
Sun 10:30 am

Grand Rapids
WGVU TV
Thu 8:30 pm, Sat 10 am
● WOOD/WOTV TV*

Kalamazoo
WGVK-TV
Thu 8:30 pm, Sat. 10 am

Lansing
● WILX TV
Sun 11 am

Manistee
WCMW TV
Sat 2:30 pm

Marquette
WNMU-TV
Sat 1:30 pm

Mt. Pleasant
WCMU TV
Sat 2:30 pm

University Center
WUCM TV
Tue 12:30 pm-Sun 3 pm

MINNESOTA

Appleton
KSMN
Sat 12:30 pm, Thu 8 pm
KWCM TV
Sat 12:30 pm, Thu 8 pm

Austin
KSMQ TV
Sat. 12:30 pm, Sun. 7 pm

Bemidji
KAWE TV
Thu 7:30 pm
Sat 12:30 pm

Brainerd
KAWB-TV
Thu 7:30 pm
Sat. 12:30 pm

Duluth
WDSE TV
Sat 6:30 pm Sun. 9:30 am

Rochester
● KAAL TV
Sat 6 am

St. Paul/Minneapolis
KTCA TV
Wed 7:30 pm, Sat 6:30 pm
KTCI TV
Wed 7:30 pm, Sat. 6:30 pm
● KSTP TV
Sun 11:30 am

MISSISSIPPI

Biloxi
WMAH TV
Sat 7 pm

Booneville
WMAE-TV
Sat. 7 pm

Biude
WMAU-TV
Sat. 7 pm

Greenwood
WMAO-TV
Sat. 7 pm

Jackson
WMPN TV
Sat 7 pm

Meridian
WMAW TV
Sat 7 pm

Mississippi State
WMAB-TV
Sat 7 pm

Oxford
WMAV TV
Sat 7 pm

MISSOURI

Columbia
● KMCG-TV
Sun 11 am

Joplin
● KOAM TV
Sun. 6 am
KOZJ TV
Sat 12:30 pm

Kansas City
KCPT TV
Thu. 7:30 pm
Sat 12:30 pm
● KMBC TV
Sat 6:30 am

St. Louis
KETC TV
Wed. 12:30 pm
Sat 6:30 pm
● KTVI TV*

Sedalia
KMOS TV
Sat 12:30 pm

Springfield
KOZK TV
Sat 12:30 pm
● KSPR TV
Sun 11 am

MONTANA

Bozeman
KUSM TV
Sat 11:30 am

Missoula
KUFM TV
Sat 11:30 am

NEBRASKA

Alliance
NETV-TV
Sat 10 am and 5:30 pm

Bassett
NETV TV
Sat 10 am and 5:30 pm

Hastings
NETV-TV
Sat 10 am and 5:30 pm

Lexington
KLNE TV
Sat. 10 am and 3:30 pm

Lincoln
KUON TV
Sat. 10 am and 3:30 pm
● KHAS-TV
Sat. 5 pm

Merriman
NETV-TV
Sat. 10 am and 3:30 pm

Norfolk
NETV-TV
Sat 10 am and 3:30 pm

North Platte
NETV TV
Sat 10 am and 3:30 pm

Omaha
NETV-TV
Sat 10 am and 3:30 pm

NEVADA

Las Vegas
KLVX TV
Sun 6 am, Tue 9 pm
Sat. 9 am and 12:30 pm
● KTNV TV
Sun 8:30 am

Reno
KNPB-TV
Sat 10:30 am Sun 5 pm
● KANE TV
Sat 11 am

NEW HAMPSHIRE

Durham
WENH TV
Thu. 8:30 pm, Sun. 10 am

Keene
WEKW-TV
Thu. 8:30 pm Sun 10 am

Littleton
WLED TV
Thu 8:30 pm Sun 10 am

Manchester
● WNUR-TV
Sun 9 am

NEW JERSEY

Camden
WNJS-TV
Thu 8 pm, Sat 8 pm
Sun 3:30 pm

Montclair
WNJN TV
Thu 8 pm, Sat 8 pm
Sun 3:30 pm

New Brunswick
WNJB-TV
Thu 8 pm, Sat 8 pm
Sun 3:30 pm

Trenton
WNJT TV
Thu 8 pm Sat 8 pm
Sun 3:30 pm

NEW MEXICO

Albuquerque
KNME TV
Thu 7 pm, Sun. 10 am

Las Cruces
KRWG TV
Sat 11:30 am

Portales
KENW TV
Sat 1:30 pm
Wed 10:30 pm

NEW YORK

Albany
● WXXA TV
Sun 10 am

Binghamton
WSKG-TV
Sat 8 a.m. 1:30 pm
and 6:30 pm Sun 7 am
● WBNG TV
Sat 7:30 am

Buffalo
WNED TV
Sat 10:30 am
WNEQ TV
Sun 7 pm
● WIVB-TV
Sun 9:30 am

Elmira
● WYDC TV*

Long Island
WLIW TV
Sat 10:30 am, Sun 8 pm

New York
WNET TV
Sat 3:30 pm
● WCBS TV
Sun 7:30 am

Norwood
WNPI TV
Sat 10:30 am

Plattsburgh
WCFE TV
Sun 11:30 am

Rochester
WXXI TV
Sat 10:30 am, Sun 3:30 pm
● WHEC-TV
Sun 6 am

Schenectady
WMHT TV
Tue 1:30 pm, Sat 10:30 am

Syracuse
WCNY TV
Sat 10:30 am
● WSTM TV
Sun 6 am

Watertown
WNPE-TV
Sat 10:30 am

NORTH CAROLINA

Asheville
WUNF TV
Sat. 3:30 pm Thu 8 pm

Chapel Hill
WUNC-TV
Sat 3:30 pm Thu 8 pm

Charlotte
WTVI TV
Thu 8 pm Sat 5 pm
Sun 11 am
WUNG TV
Sat 3:30 pm Thu 8 pm
● WBTV TV
Sat 2:30 pm Sun 1:30 pm

Columbus
WUND-TV
Sat 3:30 pm Sun 8 pm

Greensboro
● WCHF TV
Sat 6:30 a

Greenville
WUNK TV
Sat 5:30 pm Thu 8 pm
● WLOS/WBTV
Sat. 10 am

Jacksonville
WUNM TV
Sat 5:30 pm Thu 8 pm

Lenville
WUNF TV
Sat 3:30 pm, Thu 8 pm

Lumberton
WUNU TV
Sat 5:30 pm Thu 8 pm

Raleigh
● WTVD TV
Sun 11:30 am

Roanoke Rapids
WUNP TV
Sat 5:30 pm Thu 8 pm

Wilmington
WUNJ TV
Sat 9:30 pm Thu 8 pm

Winston-Salem
WUNL TV
Sat 5:30 pm Thu 8 pm

NORTH DAKOTA

Bismarck
KBME TV
Thu 7 pm Sat 6 pm

*check your local listings

National underwriters on PBS are

State Farm Insurance Companies

The Glidden Company (Glidden)

Ace Hardware Company ACE Hardware

England, Old and New

The crew finishes a job in Massachusetts and plunges into a foreign affair

Kirkside has come a long way since 1815 but still needs an updated kitchen, a new stone pathway and a historically correct paint job

Week 18 (January 3-4)

As winter arrives in Wayland, Mass., Steve learns how to remove oil tanks. Designer Glenn Bergal shows off the kitchen's cutting-edge drawer slides and frameless-construction cabinets. A conservator presents the history of the scenic wallpaper in the "great meeting room." ***Watch and learn*** Cleaning antique wallpaper

Week 17 (January 10-11)

Steve learns about turn spindle fences, chisels a straight edge into a granite walkway slab and tours the U.S. Treasury. Norm attaches new columns to the porch. ***Watch and learn*** Preventing water leakage from a shower stall

Week 19 (January 17-18)

Richard Trethaway installs the heating apparatus. We learn about illuminating kitchen counter surfaces and visit a solid surfacing manufacturer. Owner Chris Hegger gets the jump on the new security system. ***Watch and learn*** Smoothing wallpaper

Week 19 (January 24-25)

From the First Parish Church bell tower Steve looks down upon the newly painted Kirkside. We see the dual personality of the redecorated "great meeting room." Finally, the wrap party and the $200,000 question: Did the renovation come in on budget? ***Watch and learn:*** Using biscuits to install balusters

Week 20 (January 31-February 1)

Norm and Steve travel across the Atlantic to the new project site: a five-room apartment on Pembridge Place in London, England. Owners Carla and Jeremy Vogler show Steve the bleak room they will transform into the kitchen and the barren rooftop that will become a terrace. ***Watch and learn:*** Judging a bearing wall

Week 21 (February 7-8)

At the project site we meet a rag-and-bone man. Project manager David Booth and Norm peruse spiral stairs and anti-graffiti doors at a building showcase. Steve visits a high-end kitchen showroom. ***Watch and learn.*** Using a pneumatic nailer

Week 22 (February 14-15)

Norm and David Booth tour the apartment, now barely recognizable. Richard visits the city of Bath to learn about ancient plumbing techniques. The plans having exceeded their budget, the Voglers talk to Steve about scaling back. ***Watch and learn*** Building a sailer weight-bearing beam

Week 23 (February 21-22)

Steve visits a really old house built by William the Conqueror and hears the legend of the resident ravens. David Booth gets some unanticipated news from the local planning commission. ***Watch and learn.*** Building and maintaining a sturdy thatched roof

Week 24 (February 28-March 1)

Booth expounds upon the mansard roof controversy. Then the guys head to Northamptonshire, where Norm shops for columns at Simon Saunders's showroom of historical architectural details. Meanwhile, Steve tours the Saunders family estate. ***Watch and learn.*** Containing the spread of dry rot

The only tea drinkers in England? Steve and Norm navigate old-world culture, five flights of stairs and—inevitably—the local planning commission's regulations

Dickinson
KDSE TV
Thu. 7 pm, Sat. 6 pm

Ellendale
KJRF TV
Thu. 7 pm, Sat. 6 pm

Fargo
KFME TV
Thu. 7 pm, Sat. 8 pm

Grand Forks
KGFE TV
Thu. 7 pm, Sat. 6 pm

Minot
KSRE TV
Thu. 7 pm, Sat. 8 pm

Williston
KWSE TV
Thu. 7 pm, Sat. 8 pm

OHIO

Akron
WEAO-TV
Sat. 10:30 am and 5 pm
Sun. 4 pm

Athens
WOUB-TV
Sat. 5 pm

Bowling Green
WBGU TV
Sat. 1:30 pm, Mon. 3 pm

Cambridge
WOUC-TV
Sat. 5 pm

Cincinnati
WCET TV
Thu. 8 pm
Sat. 8 am and 8 pm
● WCPO-TV
Sun. 6 am

Cleveland
WVIZ TV
Tue. 7:10 pm, Sat. 1 pm
Sun. 12:30 pm
● WEWS TV
Sun. 6 am

Columbus
WOSU TV
Thu. 8 pm, Sat. 4:30 pm
● WSYX TV
Sun. 9:30 am

Dayton
WPTD-TV
Thu. 8 pm, Sat. 9:30 am
Sun. noon
● WKGT TV
Sun. 10 am

Portsmouth
WPBO-TV
Thu. 8 pm, Sat. 4:30 pm

Toledo
WGTE TV
Thu. 8 pm, Sat. 1 pm
Sun. 1 pm
● WTVG-TV*

Wheeling
● WTRF-TV*

Youngstown
WNEO-TV
Sat. 10:30 am and 5 pm
Sun. 4 pm
● WFMJ TV
Sun. 10 am

OKLAHOMA

Cheyenne
KWET TV
Sat. 9:30 am and 12:30 pm, Sun. 4 pm

Enid
KOET TV
Sat. 9:30 am and 12:30 pm
Sun. 4 pm

Oklahoma City
KETA TV
Sat. 9:30 am and 12:30 pm
Sun. 4 pm
● KOCO TV
Sat. noon

Tulsa
KOED-TV
Sat. 9:30 am and 12:30 pm
Sun. 4 pm
● KJRH TV
Sun. 10:30 pm

OREGON

Bend
KOAB-TV
Thu. 8 pm, Sat. 5 pm

Corvallis
KOAC TV
Thu. 8 pm, Sat. 5 pm

Eugene
KEPB-TV
Thu. 8 pm, Sat. 5 pm
● KEZI TV
Sun. 12:30 pm

Klamath Falls
KFTS TV
Sat. 10:30 am, Thu. 8 pm

La Grande
KTVR TV
Thu. 8 pm, Sat. 5 pm

Medford
KSYS-TV
Sat. 10:30 am, Thu. 8 pm

● KOIN/KOTI TV
Sun. 4 pm

Portland
KOPB-TV
Thu. 8 pm, Sat. 5 pm
● KATU-TV
Sun. 5:30 am

PENNSYLVANIA

Allentown
WLVT TV
Fri. 7:30 pm, Sat. 6 pm

Erie
WQLN TV
Sat. 6:30 pm
● WJET
Sat. 8:10 am

Harrisburg
WITF-TV
Thu. 8 pm
Sat. 9 am and 6 pm
● WGAL-TV
Sun. 11 am

Johnstown
● WCFW/WATM TV
Sun. 9 am

Philadelphia
WHYY TV
Sat. 4:10 pm, Sun. 7 pm
● WTXF TV*

Pittsburgh
WQED-TV
Sat. 5 pm
WQEX TV
Wed. 8:30 pm, Sun. 11 am
KDKA TV
Sun. 5:30 am

Pittston
WVIA TV
Thu. 8 pm
Sat. 5 pm and 5:30 pm

University Park
WPSX TV
Sat. 9 am and 5:30 pm
Sun. 4:30 pm

Wilkes-Barre
● WYOU TV*

RHODE ISLAND

Providence
WSBE-TV
Tue. 8:30 pm, Sat. 6 pm
● WJAR TV
Sat. 6:30 am

SOUTH CAROLINA

Charleston
● WCSC TV
Sun. 5:30 am

Columbia
● WLTX TV
Sun. 6 am

SOUTH DAKOTA

Aberdeen
KDSD TV
Sat. 4:30 pm

Brookings
KESD-TV
Sat. 4:30 pm

Eagle Butte
KPSD TV
Sat. 3:30 pm

Lowry
KQSD-TV
Sat. 4:30 pm

Marion
KZSD TV
Sat. 3:30 pm

Pierre
KTSD-TV
Sat. 4:30 pm

Rapid City
KBHP TV
Sat. 3:30 pm
● KCLO-TV
Sun. 10 am

Sioux Falls
KCSD TV
Sat. 4:30 pm
● KELO-TV
Sun. 10 am

Vermillion
KUSD TV
Sat. 4:10 pm

TENNESSEE

Chattanooga
WTCI TV
Sat. 1:30 pm

Cookeville
WCTE TV
Sat. 1 pm

Knoxville
WKOP TV
Sat. 1:30 pm
WSJK TV
Sat. 1:30 pm
● WATE-TV
Sun. 5:30 am

Lexington
WLJT TV
Thu. 9:30 pm
Sat. 12:30 pm

*check your local listings

COURTESY OF WGBH

A Guide to Resources for the "Classics" TV Series

The following is an updated list of some of the suppliers featured during *This Old House*'s 1652 television season, when the crew worked on the Kirkside project in Wayland, Massachusetts, and Carla and Jeremy Vogler's apartment on Pembridge Place in London, England.

Week 16

Tank removal crew: Cyn Environmental Services, Box 119, 1771 Washington Street, Stoughton, Massachusetts 02072, 781-344-0265
Mason: Natural Stic Gardens, 277 Concord Avenue, Sudbury, Massachusetts, 508-443-7572
Kitchen designer: Glenn Berger, Acton Woodworks, 2 School Street, Acton, Massachusetts 01720, 508-263-0222
Kitchen cabinets: Ultra Craft, Box 1249, Liberty, North Caroline 27298, 910-622-4261
Wallpaper restorer: T.K. McClintock, 1 Fitchburg St., C-213, Somerville, Massachusetts 02143, 781-666-0010
Wallpaper: Les Zones Terrestres, Zubel D&D Building, 979 Third Avenue, New York, New York 10022, 212-486-9226
Custom French door: Pella Corp., 102 Main St., Pella, Iowa 50219, 515-628-1000
Self-powered finish nail gun: ITW Paslode, 686 Forest Edge Drive, Vernon Hills, Illinois 60061-4113, 847-634-1900

Week 17

Fence: Walpole Woodworkers, Incorporated, 767 East Street, Walpole, Massachusetts 02081, 508-668-2900
Mason: Naturalistic Gardens, 277 Concord Avenue, Sudbury, Massachusetts, 508-443-7572
Floor installer: Belmont Flooring, 468 Trapelo Road, Belmont, Massachusetts 02178, 781-484-0105.
Vinyl flooring: Armstrong Solarian Supreme Pearl Glaze Collection (#88264 in bathroom, #88244 in kitchen), Armstrong World Industries, Box 300, Lancaster, Pennsylvania 17604, 717-397-0611

Week 18

Heat pump: York International Corp., 631 S. Richland Avenue, York, Pennsylvania 17403-3445, 717-771-7890
Heat pump supplier: Heat Incorporated, 9 Flagstone Drive, Hudson, New Hampshire 03051, 603-883-0104
Lighting designer: Standard Electric Supply Company, Incorporated, 1339 Main Street, Waltham, Massachusetts 02154, 0523, 781-890-1060
Solid surface counter material: Gibraltar by Wilsonart, Ralph Wilson Plastics Company, 600 General Bruce Drive, Box 6110, Temple, Texas 76503, 6110, 254-207-7000
Alarm system: American Alarm & Communications, Incorporated, 7 Central Street, Arlington, Massachusetts 02174, 781-641-2000
Radio transmitter: Alarm Net, Box 1010, Syosset, New York, 11791, 800-222-6525
Motion detectors: Detection Systems, Incorporated, 130 Perinton Pkwy, Fairport, New York 14450, 800-289-0096
Wallpaper: Waltham Wallpaper & Paint, 581 Main Street, Waltham, Massachusetts 02154, 781-893-3732

Week 19

Marble countertop: Milford Marble and Granite, 235 E. Main Street, Milford, Massachusetts 01757, 508-478-6609
Interior design: Domain, incorporated, 51 Morgan Drive, Norwood, Massachusetts 02062, 781-769-8130
Porcelain sinks and shower and tub units: Kohler Company, 444 Highland Drive, Kohler, Wisconsin 53044, 414-457-4441
Radiant baseboard heating: Radiant panel by Radiant Technology Inc., 11A Farber Drive, Bellport, New York, 11713, 516-286-0900

Weeks 20-24

Pneumatic nailer: Stanley Bostitch, Incorporated, Rt. 2 E. Greenwich, Rhode Island 02818, 401-884-2500
Tools: Black & Decker and Stanley Bostitch, Incorporated, Rt. 2 E. Greenwich, Rhode Island 02818, 401-884-2500
Planning consultant: Roger Eirtles, Town Planning Consultancy, Owen House, 116 Southwark St., London SE1 0SW, 171-928-1400
Air shipper: Federal Express, 800-463-3339
Custom windows: Marvin Window & Doors, 2020 Silver Bell Road, Suite 15, Eagen, MN 55122, 612-452-3039
Cordless nailer: ITW Paslode, 686 Forest Edge Drive, Vernon Hills, IL 60061, 847-634-1900
Convertible table saw: Black & Decker

By converting their rooftop into a deck, home owners Carla (second from right, with the crew in the gutted apartment) and Jeremy Vogler hope to raise the resale value of their five-room flat in London, England. They paid $300,000 for the unrenovated apartment, a bargain in 1992.

Memphis
WKNO-TV
Sat. 9:30 am
Sun. 5:30 pm
● WHTT/WLMT TV
Sun. 11:30 am

Nashville
WDCN TV
Sat. 6:30 pm
● WKRN TV
Sun. 12:30 pm

Tri-Cities
● WJHL/WAPK TV
Sat. 10:30 am

TEXAS

Amarillo
KACV TV
Sat. 12:30 pm
● KFDA TV
Sat. 5 pm

Austin
KLRU TV
Sat. 5:30 pm
● KTBC TV
Sat. 7 am

Beaumont
● KBMT TV
Sun. 6:30 am

College Station
KAMU TV
Sat. 12:30 pm, Mon. 10 pm, Wed. 2 pm

Corpus Christi
KEDT TV
Sat. 12:30 pm, 9:30 pm
● KRIS/KDF TV*

Dallas/Fort Worth
KERA TV
Sat. 9 am and 6:30 pm
● KXAS/KXTX-TV
Sat. 5 pm

El Paso
KCOS TV
Sat. 5 pm

Harlingen
KMBH TV
Sat. 12:30 pm
● KVEO-TV
Sun. 6 am

Houston
KUHT TV
Sun. 11:30 am
● KTRK TV
Sun. 11 am

Killeen
KNCT TV
Sat. 12:30 pm, Sun. 9:30 am

Lubbock
KTXT TV
Sat. 12:30 pm
● KLBK TV
Sun. 5 pm

Odessa
KOCV-TV
Sun. 12:30 pm

San Antonio
KLRN TV
Sat. 5:30 pm

Tyler
● KLPN-TV
Sat. 9 am

Waco
KCTF TV
Mon. 12:30 pm
Sat. 9 am and 6:30 pm
● KXXV-TV
Sun. 11 am

UTAH

Provo
KBYU TV
Sat. 12 pm

Salt Lake City
KUED TV
Sat. 8 am and 5 pm
● KTVX TV*

VERMONT

Burlington
WETK TV
Thu. 8 pm, Sat. 11 am
● WCAX TV
Sun. 8:30 am

Rutland
WVEW TV
Thu. 8 pm, Sat. 11 am

St. Johnsbury
WVTB-TV
Thu. 8 pm, Sat. 11 am

Windsor
WVTA TV
Thu. 8 pm, Sat. 11 am

VIRGINIA

Charlottesville
WHTJ TV
Sat. 8:30 am

Falls Church
WNVT TV
Sun. 3 pm

Harrisonburg
WVPT TV
Sat. 1:30 pm

Manassas
WNSV TV
Sat. 1:30 pm

Norfolk
WHRO TV
Thu. 8 pm

Norton
WSBN TV
Sat. 1:30 pm

Richmond
WCVE-TV
Sat. 8:30 am
WCVW TV
Fri. 9:30 pm
● WWBT-TV
Sun. 6 am

Roanoke
WBRA TV
Sat. 1:30 pm
● WSLS-TV
Sun. 6:10 am

WASHINGTON

Centralia
KCKA TV
Thu. 6:30 pm
Sat. 12:30 pm and 5:30 pm

Pullman
KWSU-TV
Mon. 7:30 pm
Wed. 7:30 am, Sat. 2 pm

Richland
KTNW TV
Thu. 7 pm
Sat. 2 pm, Sun. 4:30 pm

Seattle
KCTS-TV
Sun. 5 pm
● KIRO-TV*

Spokane
KSPS-TV
Sat. 8:30 am, Sun. 3:30 pm
● KXLY TV
Sun. 9:30 am

Tacoma
KBTC-TV
Thu. 6:30 pm
Sat. 12:30 pm and 5:30 pm

Yakima
KYVE TV
Sun. 5 pm

WEST VIRGINIA

Beckley
WSWP TV
Sat. 2:30 pm

Bluefield
● WOAY TV*

Charleston
● WCHS-TV
Sun. 6 am

Huntington
WPBY TV
Sat. 2:30 pm

Morgantown
WNPB-TV
Sat. 2:30 pm

Wheeling
● WTRF TV*

WISCONSIN

Green Bay
WPNE-TV
Wed. 7:30 pm, Sun. 4 pm

● WCBA TV
Sun. 7 am

La Crosse
WHLA TV
Wed. 7:30 pm, Sun. 4 pm
● WEAU-TV
Sun. 9 am

Madison
WHA TV
Wed. 7:30 pm, Sun. 4 pm
● WMTV TV
Sat. 5 pm

Menomonie
WHWC TV
Wed. 7:30 pm, Sun. 4 pm

Milwaukee
WMVS-TV
Thu. 7:30 pm, Sat. 8 am
● WTMJ TV
Sun. 6 am

Park Falls
WLPF TV
Wed. 7:30 pm, Sun. 4 pm

Wausau
WHRM TV
Wed. 7:30 pm, Sun. 4 pm
● WJFW TV
Sun. 10:30 am

WYOMING

Riverton
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Sat. noon and 5 pm

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DIRECTORY

EXTRAS
pp. 18-25

p. 18—Restoration Puppetry. Beyer Blinder Belle (architecture firm in charge of restoration), New York, NY, 212-777-7800. Barney Skanska Construction Co. is providing its services pro bono, New York, NY, 212-972-0720. The City Parks Foundation will accept donations, 212-360-1399. *Reported by Elena Kornblath.* **Quote.** *Robert A.M. Stern Houses*, by Robert A.M. Stern, Monacelli Press, 212-831-0248. p. 19—**Gritty Bitty.** Bosch 1278VSK detail sander, Skil/Bosch Power Tool Co.; 800-815-8665. *Reported by Tom Baker.* **Chip off the Cold Block.** Original Mutt (orange, bottom) and Big Mutt (orange, top), Olympia Village Blacksmith, 800-888-8782. Ice chisel (blue) and shank sidewalk scraper (green), Ames Lawn and Garden Tools, 800-624-2654. *Reported by Thomas Dodson.* p. 20—**Bit Part.** Retrofit kit, Danaher Tool Group, The Jacobs Chuck Mfg. Co., 717-898-6540, ext. 436. Or check with your local tool retailer for router brands with wrenchless chuck feature. *Reported by Tom Baker.* **Primal Therapy.** The Hart Woody HW22, Hart Tool Co., 800-331-4495. *Reported by Wilham Marsano.* **Quality of Life.** International Ground Source Heat Pump Association, Oklahoma State University, 800-626-4747. Geothermal Heat Pump Consortium, 888-333-4472. *Reported by Jeanne Huber.* p. 21—**Take It All Off.** DIF wallpaper stripper, single-head Paper Tiger, $7.59, and triple-head Paper Tiger, $15.57, all from Wm. Zinsser & Co.; 732-469-8100. Striped wallpaper (WR60/01) and Rosebud wallpaper (W750/07), both from Osborne & Little, 212-751-3333. Taping knife, 6-in. Flex Ergonomic, 800-423-3845. Paper scraper, Wm. Zinsser & Co. Inc. *Our thanks to:* Milton Clennon, Jeff Keelan, Riva Abrams, Norm and Sally Raedle, Patrick S. Shey. *Reported by Thomas Dodson, Craig Kellogg and Sarah Shey. TOH* Serenade: "Louisiana Fairy Tale," by J.F. Coots, H. Gillespie and M. Parish, 1935. Two recent Fats Waller CDs with the *TOH* version: *Fats Waller and His Rhythm: Breakin' the Ice, The Early Years, Pt. 1, 1934-35*, 1995, RCA (Bluebird) and *The Chronological Classics: Fats Waller, 1935*. Classics Records. *Reported by Miriam Silver.* Seeing the light: Edison National Historic Site, W. Orange, NJ, 973-736-0550. *Our thanks to:* Jerry Korb, North Country Museum of Electric Light, Jeffersonville, VT, 802-849-6072. *Reported by Craig Kellogg.* **Books:** *The Handplane Book*, by Garrett Hack, The Taunton Press, 800-888-8286. *Early Days in the Adirondacks: The Photographs of Seneca Ray Stoddard* by Jeanne Winston Adler, Harry N. Abrams Inc., 800-345-1359. *Robert A.M. Stern Houses* by Robert A.M. Stern, (see information under "Quote" directory). *Reported by Laura Fisher Kaiser.* **Prepaint.** *Finishes for Exterior Wood: Selection, Application and Maintenance* by R. Sam Williams, Mark Knaebe, William Feist, Forest Products Society, 608-231-1361 ext. 209. Reported by Jeanne Huber. p. 25—**Splitting Hairs.** E.Z. Read, Olympia Industrial, 800-888-8782. Reported by Laura Fisher Kaiser. **¿Puede traerme?** Can you-*puede*, bring-*traer*, me-*me*, the hammer-*el martillo*, please *por favor*. Future editions of the booklet will be simply titled "Construction Spanish, $2.25, Investment Group Services Ltd., 970-568-3184. *Reported by Jeanne Huber.* **Horsing Around.** Carousel open all year. *A Carousel for Missoula*, by S. Devlin, T. Bauer and J. Engen, The Missoulian, 800-366-7193. For more information: Carousel for Missoula Foundation, 406-549-8382. *Reported by Mark Baker.* **Dry Run.** Snowfree heated pavement system, Superior Graphite, 312-559-2999. Conductive concrete: National Research Council, Institute for Research in Construction, Ottawa, Canada, 613-993-4028. *Reported by Thomas Dodson.*

WGBH Educational Foundation does not endorse any product or service mentioned or advertised in this magazine.

NO BATTERIES
pp. 27-34

pp. 32-33—1. Sioux 8035 60-degree angle drill with keyless chuck and paddle, $276, Sioux Tools Inc., 800-722-7290. 2. Sears Craftsman 02711, ½-in. heavy-duty with keyed chuck, $190, Craftsman Catalog, 800-377-7414. 3. Milwaukee Magnum 0225-1, ½-in. pistol-grip variable speed drill with keyless chuck and Quik-Lok replaceable power cord, $236, Milwaukee Electric Tool Corp., 800-414-6527. 4. Makita 6501 ¼-in. pistol-grip drill with depth gauge, $126, Makita Corp. of America, 800-462-5482. 5. Makita 6301LR ½-in. D-handle drill with auxiliary side handle and depth stop, $320. 6. DeWalt DW236 ½-in. pistol-grip variable speed drill with keyless chuck and spindle lock button, $149-69, De Walt Industrial Tools, Towson, MD, 800-433-9258. p. 33. 7. Hitachi D13Y ½-in. two-speed D-handle right-angle drill with keyed chuck and auxiliary side handle, $415, Hitachi Koki USA, Norcross, GA. 8. Bosch 1025VSR ½-in. pistol-grip drill with keyed chuck and auxiliary side handle, $238, Skil/Bosch (SB) Tool Corp., Chicago, IL., 800-815-8665. 9. DeWalt DW160 ⅜-in. close-quarters right angle drill with paddle switch, chuck guard and auto stop brushes, KI, $39-59. 10. *Milwaukee Hole Hawg* 1676 6½-in. 2-speed angle drill with keyed chuck, $541. 11. *Porter Cable* 666 ⅜-in. with T-handle and keyed chuck, $260, Porter Cable, Jackson, TN, 800-487-8665. p. 34—1. DeWalt DW100 ⅜-in. pistol-grip drill with keyed chuck. $64-$69. Porter-Cable 635 ½-in. spade handle drill with auxiliary handle and dust-sealed switch, $294. Milwaukee 3002-1½-in. right-angle drill with keyed chuck, $401. 2. Grout mixing paddle, 5-gallon Mud Mixer #24092, $12.98, Ivy Classic Industries, Elmsford, NY, 914-347-3705. Hitachi D10VI ⅜-in. pistol-grip drill with keyed chuck, belt clip and optional auxiliary side handle, $172, 800-598-6651. **Keyless.** ⅜-in. chuck, Hand-rite Lite, The Jacobs Chuck Manufacturing Co., Danaher Tool Group, Lancaster, PA, 717-898-6540. Our thanks to: Tim Landry and Tom Lively, Berland's House of Tools, 800-339-0026. Baltimore Museum of Industry; 410-727-4808.

ANGLE IRONS
pp. 37-40

Steel and brass 12-in. combination square: CS 12, $140, Bridge City Tool

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Works, 800-253-3332. Twelve-inch combination square with protractor head, C434-12-4R, $163.55, L.S. Starrett Co., 978-249-3551. Seven-inch Swanson Speed (rafter angle) square, S101, $8, Swanson Tool, 815-469-9453.

MEASURE TWICE, CUT TWICE
pp. 41-45

Cement-board screws: Durock twin thread, 2½-in., USG Corp., 800-874-4968. Cement board: Durock 36-in. x 72-in., ½" thick, USG Corp., 800-874-4968. Latex-based mastic: Hydroment 7001, Bostik, 800-726-7845. Wall grout: Hydroment white; Bostik. Dry-tile cutter (Superior# 1A): Round rubbing stone: 4-inch diam. (Gundlach). Rubber grout floater (Precision). All from Albert F. Fitzgerald Inc., 617-935-7821. Nippers, MK Diamond Products. Diamond-blade wet saw: MK-101, $950-$1,000, MK Diamond Products, 800-421-5830. Trowels: 2-inch margin trowel, $14, and ⅛-inch notched trowel, $10, Marshalltown Trowel Co., 515-753-5999. Field tiles: Ceramica Vogue 4-in. vitreous tiles from Italy, Alphabet tiles: 4¼-in. tiles from Guatemala, both available from Shep Brown Associates; 781-935-6080.

GLUED FOR GOOD
pp. 47-50

Wood Glues.
Hide: Titebond Liquid Hide Glue, Franklin International, Columbus, OH, 800-347-4583. Pearl Hide Glue 58248, The Woodworkers' Store, Medina, MN, 800-279-4441. Resorcinol: Chembond 4001/H003, Neste Resins Corp., Springfield, OR, 800-547-9525, Add-a-Luster Co., Clifton, NJ, 973-473-1810 resorcinol, Add-a-Luster Products, 973-473-1810. Weldwood waterproof resorcinol, DAP Inc., 888-327-8477. **Urea-formaldehyde:** Weldwood plastic resin, DAP. **Yellow:** Titebond Original and Titebond II Premium Wood Glue, Franklin Int'l. Elmer's Carpenter's Wood Glue and Elmer's Weather Tite, Elmer's Products, 800-848-9400. Weldbond, Frank T. Ross & Sons, Scarborough, Ontario, Canada 416-282-1107. Weldwood Carpenter's, DAP. Liquid Nails woodworking glue, Macco Adhesives, ICI Paints, Cleveland, OH, 800-634-0015. **White:** Elmer's Glue-All, Elmer's Products. Weldwood Hobby & Craft, DAP. Titebond White, Franklin. Add-a-Grip white glue, Add-a-Luster Products. **Polyurethane (liquid):** Gorilla Glue, The Gorilla Group, Santa Barbara, CA, 805-963-2234. PL Premium Wood Glue, Chem Rex, Inc., Shakopee, MN, 800-433-9517. Titebond Polyurethane, Franklin. Wood Wizard, Loctite Corp., Rocky Hill, CT, 800-562-8483. Elmer's Pro Bond, Elmer's Products, Columbus, OH, 800-848-9400. **Polyurethane (mastic):** 3M Marine Adhesive Sealant 5200, 3M, St. Paul, MN, 800-364-3577. PL Premium Polyurethane Construction Adhesive, ChemRex, Inc. **Hot Melt:** Hot melt adhesives for glue guns are made by 3M Co. Adhesive Systems Division (800-362-3550), Loctite Corp. (Houseworks) and Add-a-Luster. Sears brand is available at local Sears stores. Power Fast glue sticks, Desa International, Bowling Green, KY, 800-626-2237. **Cyanoacrylate:** Hot Stuff Original Instant Glue, Satellite City Inc., Simi Valley, CA, 805-522-0062. Brush-On Instant Wood Glue, Loctite. Epoxy: Duro Master Mend, Loctite. West System Epoxy, Gougeon Brothers Inc., Box 908, Bay City, MI, 517-684-7286. **Contact cement:** Weldwood Non-Flammable Contact Cement, DAP. Weldwood Original Contact Cement, DAP. Titebond Fast Dry Contact Cement, Franklin International. Hybond 80NFM Non-Flammable Contact Adhesive, Pierce & Stevens, Buffalo, NY, 800-888-4910, Formica brand contact cements, distributed by Chem Rex. **Glue tools** (arranged by photo number in issue): 1. Set of 6 French brushes, 51P24.01, $45.85, Garrett Wade, New York, NY, 800-221-2942. Electric Pot, 46458, $89.99, The Woodworkers' Store, 800-279-4441. 2. Glue Applicator (bulb type), RB73151, $16.95, Trend Lines, Revere, MA, 800-767-9999. **Hand glue spreader** (roller), GS0028, 5½-in. plastic, $75, Adwood Corp., High Point, NC, 800-397-1860. 3. All-in-One Glue Spreader Set, 352, $9.90, American Machine and Tool Company, 800-435-8665. 4. High-pressure glue injector, 836702, $24.95 and accordion injector, 891896, $1.95, Woodworker's Supply, 800-645-9292. 5. Scotch-Weld EPX Manual Applicator (for two-part epoxy cartridges) and Polygun EC Adhesive Applicator, 3M Adhesives Div., 800-362-3550.

GET YOUR MORTGAGE FROM A RAILROAD
pp. 53-54

Further information: National Association of Mortgage Brokers, 703-610-9009. Pathfinder Mortgage Company: 602-285-0000. Mortgage Bankers Association, 202-861-6500. HSH Associates, 201-838-3330. Our thanks to: Ken Pingel, Equity Acquisition Associates, Salem, Oregon, Ronald Roge, personal financial planner, Bohemia, NY.

HORSE LOGGING IN MAINE
pp. 66-71

Chain saw: Jonsered 670 Super with 24-inch bar, $649.94, imported from Sweden by Scotsco Inc., 503-653-7791. Further reading: *Rural Heritage* magazine subscription. *The Horse in the Forest: Caring, Training, Logging* by Hans Sidback, Swedish University of Agricultural Sciences. Both from Rural Heritage, 931-268-0655. Horse-logging instruction: Jason Rutledge, Environmentally Sensitive Logging and Lumber Co., Copper Hill, VA, 540-651-6355. Tim Carroll, Cedar River Horse Logging, four-day course, Lyle, MN, 507-325-4197.

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A CELLAR FOR THE BUYER
pp. 72-75

Designer: Baltic Leisure, Oxford, PA, 800-441-7147, fax 888-422-5842. Cooling unit: Breez Aire WKE3000 with Sentinel II microprocessor, $1,395, Breez Aire Products Co., San Diego, CA. Wine accessories: Redwood bottle racks, single bottle system, $1.50 per bottle, redwood tasting table, 24-bottle table with wineglass holder, $150, both from Baltic Leisure. Our thanks to: Anthony J. Wilke, Wine Racks Unlimited, Cincinnati, OH, 800-229-9813.

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AMERICA'S FIRST NOUSES
pp. 76-83

John Whipple House. 508 356-2811. Fairbanks House: 781 326-1170. Parson Barnard House: The North Andover Historical Society, 978-686-4035. Boardman House: Appointment only, the Society for the Preservation of New England Antiquities, 617-227-3957, ext. 267. Our thanks to: Andrea Gilmore, Building Conservation Associates; Abbott Lowell Cummings, Richard Candee, director of preservation studies, Boston University; Katherine Cordova, Fairbanks House; Diane Viera and Brian Pfeiffer, Society for the Preservation of New England Antiquities; James Z. Kyprianos, Ipswich Historical Society; Carol Majahad, Parson Barnard House. Dismantled houses for sale: Willard Restorations Inc., 860-529-1401. David Ottinger, Antique Buildings and Materials, 603-463-7451. Intact houses for sale: Historic Homes & Properties (news paper section listing old homes for sale in the Northeast, The Bee Publishing Co., 203 426-3141.

YANKEE INGENUITY
pp. 84-93

Custom garage doors: HWBD HBTG-16, Hahn's Woodworking, 908-241-8825. Macadam drive: Larry Torti Paving, 401-568-1500. Weather stripping for windows: Advanced Repair Technology, 607-264-9040. Radiant floor tubing: Wirsbo Company, 800-321-4739. Panelized shingles: Cedar Valley Shingle Systems, 800-521-9523. One-pour piling: footing forms, Bigfoot Footing System, F&S Manufacturing Inc., 800-934-0393. Fiberboard column forms, Arlington Coal & Lumber; 781-643-8100. Debris-shedding gutters: Al Smith Gutter Systems, Lenoxdale, MA, 413 637-3189. Screen doors: Phantom Screens; 888-742-6866. Standing seam metal roof: Permetallic 2000 pre-weathered Galvalume panels, Englert Inc; 732-826-8614. Our thanks to: John R. Dumke, Roll Former Corporation, Willow Grove, PA; John Stahl, Stahl Restorations, Hoboken, NJ; Angelo Borzillo, Galvalume Sheet Producers of N. America.

Home automation: IBM Home Director Kit, 800-426-7235, ext. 4340.

Insulation system: Icynene, 800-758-7325.

Heat-recovery ventilation system: Lennox, 800-953-6669.

Simulated divided lites: Marvin, 800-346-5128.

Bracket Fixtures: Rejuvenation, 888-343-8548.

Mattress: Sealy Level VII Ultra Plush Pillowtop mattress, 800-877-7496.

Joists: Trus Joist MacMillan's TJI joists, 800 338 0515.

Lighting: Sylvania home lighting products, 800 544-4828.

POTS AND PLANS
pp. 94-95

Kitchen design: Phil Mossgraber, Natick, MA; 508 655 4138.

DOOR MAKER
pp. 96-101

Peter Goodi Oakland, CA; 510-530-3198. Our thanks to: Paul and Janet Brock and Peg Hammerquist for allowing their doors to be photographed.

FIRE SPRINKLERS
pp. 102-107

Opening-page sprinkler head: Model A pendant, $17.40, The Reliable Automatic; 800 431-1588. Concealed sprinkler: Model F1/RES/3, $28.80, Reliable. Exposed sprinkler: Model M-4 Microfast pendant, $16.42, Viking Corp.; 800-968-9501. Other sprinklers photographed: 1. Model ZX-RES sidewall, chrome, $27.50, Reliable. 2. Model M-5 Microfast horizontal side-wall, white, $17.90, Viking. 3. Model ZX-RES pendant, chrome, $27.50, Reliable. 4. Model A horizontal side-wall, bronze, $17.20, Reliable. 5. Model F1/RES/2 pendant, chrome, $17.90, Reliable. 6. Model H-3 Horizon, Navajo white, $21.42, Viking. 7. Omega R-1M pendant, brass plated, $23.00, Central Sprinkler Corp., 800-523-6512. Pressurized water tank: 300 gallon, $3,000, Home Fire Sales Inc., 800 786-7133. Plumbing setup on p. 105: Most parts are widely available at plumbing supply stores. Pressure gauge: 98248001, $25, Reliable. Flow detector: T-Tap, 1 through 1½ inch WFDT, $126 at Reliable, made by System Sensor, 800 736-7672. Plastic pipe and fittings: made from Blaze Master CPVC, ¾-inch pipe, $12.75 per 15-foot length, ¾-inch tee fitting, $2.36, head adaptor, ¾ inch by ½ inch, $4.19, Spears Manufacturing Co.; 818-364-1611. For more information: NFPA Code 13D, $22.25, and *The Residential Sprinkler System Handbook* RSS-91, $61.50, National Fire Protection Association, 800-344-3555. Alternative installation methods, contact Richard M. Patton, president, Crusade Against Fire Deaths, 916-721-7700. List of nonunion installers: American Fire Sprinkler Association; 214-349-5965. List of unionized installers: National Fire Sprinkler Association, 914-878-4200. General information: Contact Operation Life Safety, 703-273-9815. Our thanks to: Jerry Pepi, Grinnell Corp; Leonard Blum, Reliable; Dick Morris, National Home Builders Association; Tom Johnson, City of Napa, CA; Jim Ford, Rural/Metro Fire Department, Scottsdale, AZ; Pat Coughlin, Operation Life Safety; Dan Madrzykowski, National Institute of Standards and Technology; Ken Johns of Ken Johns Plumbing, Napa; Jim Lubas, Spears Manufacturing Co.

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POSTER: IDENTIFYING TREES IN WINTER
pp. 109-110

Morton Arboretum, Lisle, IL, 630-719-2400, 630-719-2465 (taped message). Scientific names. A specific tree often has many common names. These are the scientific (Latin) names of trees pictured: Staghorn sumac, *Rhus typhina*, American linden, *Tilia americana*, river birch, *Betula nigra*, Ohio buckeye, *Aesculus glabra*, tulip tree, *Liriodendron tulipifera*, Chinese chestnut, *Castanea mollissima*, sour-gum, *Nyssa sylvatica*, honey locust, *Gleditsia triacanthos*, yellowwood, *Cladrastis lutea*, sycamore, *Platanus occidentalis*, ginkgo, *Ginkgo biloba*, downy hawthorn, *Crataegus mollis*, saucer magnolia, *Magnolia soulangiana*, black alder, *Alnus glutinosa*, redbud, *Cercis canadensis*, prairie crab apple, *Malus ioensis*, shagbark hickory, *Carya ovata*, European larch, *Larix decidua*, flowering dogwood, *Cornus florida*, white oak, *Quercus alba*, blue beech, *Carpinus caroliniana*, shadbush, *Amelanchier laevis*, sugar maple, *Acer saccharum*, American hornbeam, *Ostrya virginiana*, burr oak, *Quercus macrocarpa*, silverbell, *Halesia carolina*, persimmon, *Diospyros virginiana*. Our thanks to: Nancy Striebel and Sarah Solsvig, the Morton Arboretum.

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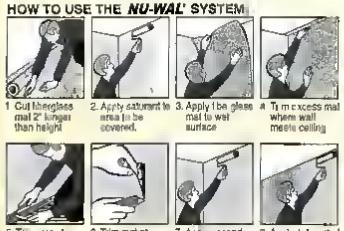
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8. Apply 1st coat of saturant to adjacent area.
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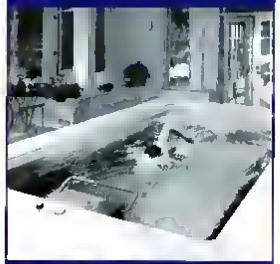

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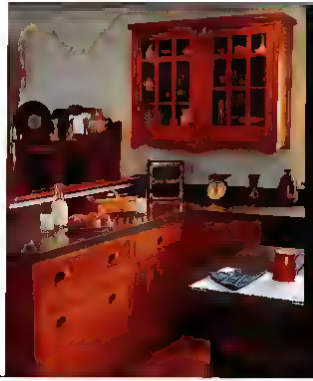

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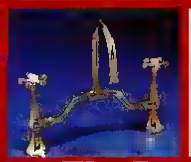

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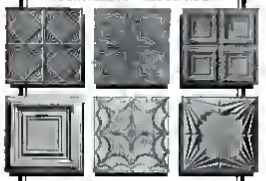

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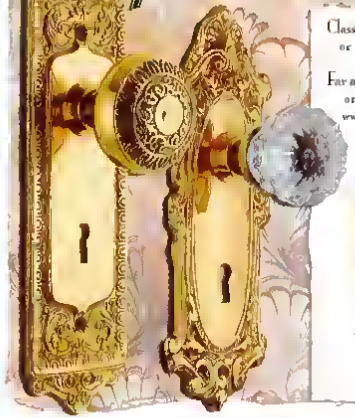

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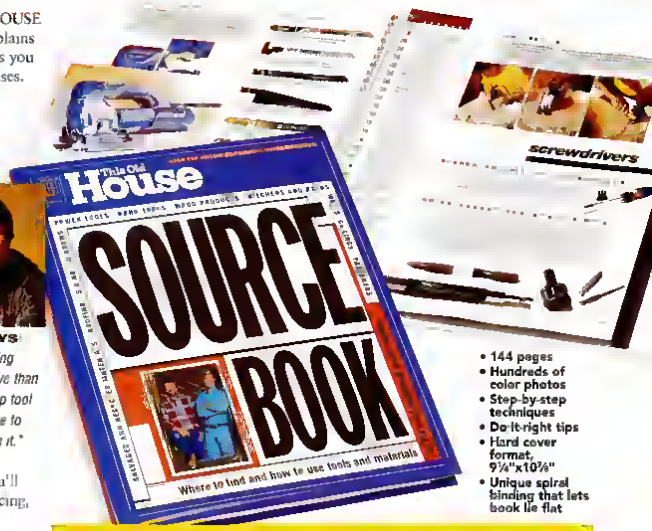

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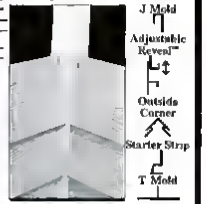

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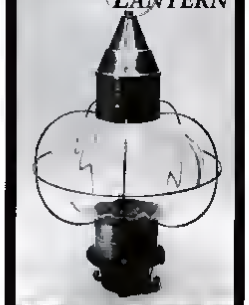

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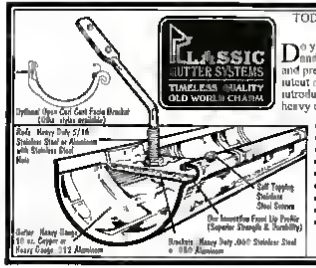
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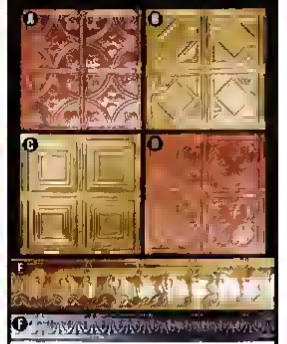

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	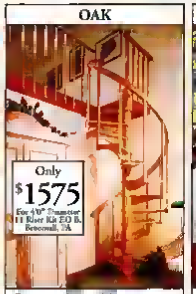	
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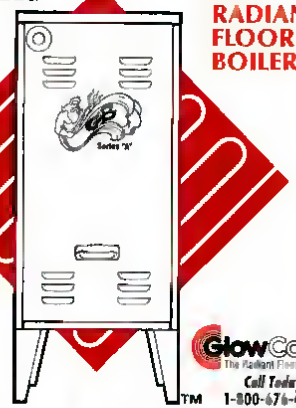

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THIS OLD HOUSE

BY BEN KALIN

PRICE

$33,500

LOCATION

Piney Woods Road
Belvidere, North Carolina

In the northeast corner of North Carolina, flat fields of cotton, peanuts and tobacco spread out for miles, surrounding dozens of early 19th-century farmhouses. There are so many that Preservation North Carolina, which has rescued more than 300 houses in 22 years, can champion only those with architectural and historical significance.

One, the Mitchell Ward house, stands in the shade of a few pines and crape myrtles at the edge of a 30-acre cotton field. Built in 1832, the 1,800-square-foot Federal has a dentiled gable-end fanlight, an off-center entry hall and other original features that make it intriguing. But its ruined siding and crumbling plaster also make it a restoration challenge.

"We usually sell these houses on romance," says Peter Rascoe, who manages the northeast region for Preservation North Carolina. "Because of all the work they need and their distance from larger towns, buyers have to fall in love with them."

Preservation North Carolina has asked Mitchell Ward's owner for a one-year extension on its option to sell the house with 3½ acres, a reprieve that ends in February. If that fails, its fate lies with the owner, who will likely demolish it to make room for more cotton and the long arms of pivot irrigators.

CONTACT

Peter Rascoe
Preservation North Carolina
420 Elliott Street
Edenton, NC 27932
919-482-7455

Surrounded by an encroaching cotton field, the Mitchell-Ward house offers a glimpse of an Old South that had nothing to do with plantation mansions. Still, this example of Federal style has its embellishments, such as turned reeded posts and hand-carved modillion blocks on the front porch.

PHOTO: GRAHAM BY CHARLES HARRIS

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